Health Risk Behaviors

1997

September 1999

Michigan Department of Community Health

MDCH

John Engler, Governor
James K. Haveman, Jr., Director

Health Risk Behaviors *1997*

September 1999

State of Michigan
Governor - John Engler

Michigan Department of Community Health
Director - James K. Haveman, Jr.

Community Public Health Administration
Deputy Director and Chief Medical Officer - David R. Johnson, M.D., M.P.H.

Bureau of Epidemiology
Director - Matthew Boulton, M.D., M.P.H.

Michigan Public Health Institute
Executive Director - Jeffrey R. Taylor, Ph.D.

Authors
Nancy McCrohan, Ph.D.
Erika Garcia, M.A.
Michigan Public Health Institute
and
Ann P. Rafferty, Ph.D.
Harry B. McGee, M.P.H.
Mathew J. Reeves, BVSc, Ph.D.
Division of Epidemiology Services
Bureau of Epidemiology
Michigan Department of Community Health

Layout & Production
Sally Bancroft
Kim Lamphere
Michigan Public Health Institute

This report was prepared collaboratively by the Michigan Department of Community Health and the Michigan Public Health Institute.

This project was financed in part through the Behavior Risk Factor Surveillance System grant component of a Cooperative Agreement (U58/CCU501994) from the U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention. The opinions, findings, and conclusions expressed in this publication do not necessarily reflect the opinions or policies of the Federal Centers for Disease Control and Prevention.

MDCH is an Equal Opportunity Employer, Services and Programs Provider. Two-hundred copies of this report were printed.

TABLE OF CONTENTS

ACKNOWLEDGMENTS

Data were collected for the 1997 Michigan Behavioral Risk Factor Survey by the Institute for Public Policy and Social Research, Survey Research Division, at Michigan State University. The authors are grateful to Larry Hembroff, Ph.D. and his staff for their participation in this effort.

We also appreciate the assistance provided by the Behavioral Risk Factor Branch at the Centers for Disease Control and Prevention.

We are especially grateful to the residents of Michigan who agreed to participate in this survey.

EXECUTIVE SUMMARY

The Michigan Behavioral Risk Factor Surveillance System (BRFSS) is the only source of estimates of the prevalence of certain health behaviors, conditions and practices of Michigan adults. These estimates are based on data collected from a random-digit-dial telephone survey of 2,500 Michigan households. One randomly selected adult was interviewed in each of these households. The selected respondent must have been a Michigan resident who lived in a private residence and had a telephone. The data are weighted to represent estimates for the general adult population of Michigan. Data are collected throughout the year and summarized annually in this report. The annual sample size is too small to make estimates for individual counties or for racial groups other than whites and Blacks.

Those who don't live in a private residence or who don't have a telephone are not represented in the sample. Examples of groups who do not live in a private residence include college students living in dormitories, military personnel in barracks and prisoners. Prevalence estimates for these groups may or may not be the same as they are for the general population, depending on the behavior, condition or health practice being estimated from the sample. While the survey adjusts for non-response, this assures that responders do not differ from non-responders, an assumption that may introduce further error. Since the estimates are based on self-reported data they may underestimate, or overestimate, the actual prevalence of a particular risk factor in the population. Despite these potential limitations, these data are useful for comparing prevalence estimates over time within Michigan and in comparing the prevalence estimates from Michigan with those of other states.

Principle Findings: In 1997 the prevalence of health care coverage, mammography use, colorectal cancer screening, and adult car safety belt use in Michigan was higher than the median prevalence among all states. The proportion of Michigan adults who reported that they would encourage a sexually active teenager to use a condom was higher than the median proportion for all states. The self-reported prevalence of high blood cholesterol, diabetes, smoking, overweight, binge drinking, and drinking and driving in Michigan was higher than the median prevalence among all states. The prevalence of helmet use by children riding bicycles was lower in Michigan than the median prevalence among all states.

The prevalence of the following conditions in Michigan adults was similar to the national median: self-perceived poor or fair general health, poor physical or mental health in the last month, perceived chance of getting AIDS, high blood pressure, heavy drinking, use of influenza and pneumonia vaccinations, use of clinical breast exams and pap smear exams, child care safety seat use and being tested for HIV.

Health Care: About 8 percent of Michigan adults reported that they did not have health care coverage in 1997. This estimate represents about 600,000 uninsured Michigan residents aged 18 years and older. The populations most at risk of having no health care coverage were the youngest (i.e., 18-24 years old), those with lower household incomes (i.e., < $20,000), and those with the least education (i.e., < high school). Most health care coverage was either related to employment (>70%) or sponsored by the government (24%). Over a quarter (>27%) of uninsured respondents reported they had had no health care coverage for five years or more. The estimated proportion of Michigan adults without health care coverage has declined since 1991. Health care coverage of children was not addressed.

General Physical and Mental Health: About 13 percent of respondents, representing about 950,000 adults, reported that in general their health was only fair or poor. Respondents reported their physical or mental health was not good an average of 3.3 days a month and poor physical or mental health prevented

usual activities an average of 1.7 days in the previous month. These self-reported physical and mental health measures have been relatively stable since 1993.

Cardiovascular Disease: Although cardiovascular diseases are the leading cause of death in Michigan, there are no population-based state-specific estimates of the number of people who have been diagnosed with a cardiovascular disease. Among adults age 35 years and older, 11.1 percent reported that they had been told by a doctor that they had had either a heart attack or myocardial infarction, angina or coronary heart disease, or a stroke. This estimate represents about 550,000 Michigan adults aged 35 years and older.

Diabetes: The estimated prevalence of diabetes, determined by respondents who reported they had been told by a doctor that they had diabetes, was almost 6 percent and represents an estimated 440,000 adults.

Hypertension: About 23 percent of respondents had ever been told by a health professional that their blood pressure was high, representing about 1,670,000 Michigan adults. About 60 percent of these reported taking medication to reduce their blood pressure. This estimate is an indicator of the potential burden of hypertension in the adult population, although it does not measure the proportion of those diagnosed with hypertension who have this condition under control.

Cholesterol: Among the almost 76 percent of respondents who had ever been tested, 31 percent reported that a health professional had told them they had high blood cholesterol. Among these, about 27 percent were taking medication to lower their cholesterol. The proportion of adults who have had their cholesterol checked has increased from 57.9 percent in 1988.

Smoking: The overall prevalence of cigarette smoking in 1997 was 26.2 percent, representing about 1,900,000 Michigan adults. Those most likely to smoke were male, younger and had less education. Almost 41 percent of current smokers reported they were currently trying to quit smoking. The prevalence of adult cigarette smoking has remained relatively stable in the last several years.

Overweight: Diet and inactivity, which rank second to smoking as preventable causes of death, are important determinants of overweight and important risk factors for many chronic diseases. Almost 35 percent of respondents were estimated to be overweight based on their self-reported height and weight. This estimate represents about 2,550,000 Michigan adults. The groups most at risk were Blacks females, males, those with less education, and those in the middle age groups. The prevalence of overweight has increased from 22.7 percent in 1987.

Diet: Data on physical activity were not collected in 1997 but this report includes a special chapter on diet. One widely used indicator of good diet is the consumption of fruits or vegetables five or more times per day. Using this measure, over three-quarters of respondents, or about 5,510,000 Michigan adults, do not eat the recommended daily quota of fruits and vegetables.

Multiple Risks: Smoking, high blood pressure, diabetes, overweight, and high blood cholesterol are risk factors for cardiovascular disease. Most Michigan adults (64%) have at least one of these risk factors. Most (60%) respondents have been given advice by a doctor to modify their behavior to lower their risk of developing cardiovascular disease. Almost 23 percent of respondents over the age of 34 reported they take aspirin daily, or every other day, to reduce their risk of heart disease or stroke.

Women's Health: In the area of women's cancer screening (48%) of women 40 years of age and older reported not having had both a clinical breast examination and a screening mammogram within the past year. Although women in the age group 50-64 years old were more likely than older or younger women to have followed this recommendation, only 59 percent were compliant.

Among women 18 years of age and older, 16.2 percent reported they had not had a screening Pap test within the previous three years. Those most at risk for not having this examination were women over the age of 64 years and those with less education and lower household incomes.

Colorectal Cancer Screening: Among male and female respondents age 50 years and older, 78 percent had not used a home blood stool test in the past year, and 65 percent had not had a sigmoidoscopic or proctoscopic examination in the past five years. Respondents under 60 years old were less likely to have these recommended screening examinations than older respondents.

Adult Vaccinations: Among respondents aged 65 years and older, 37.1 percent reported they had not had a flu shot (influenza vaccination) in the past year and 54 percent had never had a pneumonia vaccination. Blacks were most at risk from not receiving these vaccinations.

Alcohol Use: Based on respondents' self-reported drinking in the past month almost 19 percent of Michigan adults were estimated to binge drink, 3.8 percent were estimated to be heavy drinkers and 3.5 percent reported they had driven a car after having too much to drink. Those most at risk for these potentially harmful drinking behaviors tended to be young and male. Unlike many other behavioral risk factors reported in the BRFS, the proportion at risk for alcohol-related behaviors tended to increase with education and household income.

Injury Prevention: More than one-quarter (28%) of Michigan adults were at risk from not always wearing their care safety belts. Those most at risk were younger, male, and less educated. Among respondents who had children in their household, 16 percent reported that the oldest child under age 16 years did not always use a safety belt or safety seat. Most (79%) children aged 5 to 15 years did not always wear a helmet when riding a bicycle. Black children were more likely than white children not to use car safety seats or safety belts or helmets when riding bicycles.

Only 2.2 percent of household were estimated not to have a smoke detector, however 26.1 percent of respondents had not tested their smoke detector in the past six months.

HIV/AIDS: Questions about HIV or AIDS were asked of respondents younger than 65 years. Only 1.5 percent felt that children should receive no education in school about HIV infection and AIDS. Of those who thought children should receive such education 40 percent felt this information should not be provided until fifth grade and 4 percent felt it should not be provided until eighth grade. Almost 93 percent of respondents would encourage a sexually active teen to use a condom. About 20 percent of respondents said they would advise a sexually active teenager to make his or her own decision about sexual activity or not give them advice rather than to encourage them to refrain from sexual activity.

Over 5 percent of respondents thought that their chances of HIV infection were high or medium and 43.7 percent reported they had been tested for HIV.

The authors hope that the information presented in this report is useful. The cooperation of Michigan residents who participated in this survey was essential to estimate the prevalence of the health behaviors, practices and conditions that were measured and sincerely appreciated. Please call 517-335-9080 if you have questions about this material.

INTRODUCTION

Certain behaviors, conditions, and preventive health care practices are important factors in many injuries and diseases. Their surveillance in a population is essential because of their relation to morbidity and mortality and because many of them are potentially modifiable. The Behavioral Risk Factor Surveillance System (BRFSS), through cooperative agreements between the Centers for Disease Control and Prevention and the states, provides the only state-specific, population-based estimates for many health-related behaviors, conditions and preventive health care practices. In 1997, Michigan collected data for the eleventh consecutive year as part of this surveillance system. The BRFSS provides the data to measure progress for selected Michigan Department of Community Health (MDCH) Critical Health Indicators.

The 1997 Michigan BRFS collected data on health status, health care access, diabetes, cigarette smoking, nutrition, weight control, demographics, height and weight, women's health issues, injury control, HIV/AIDS issues, adult immunization, colorectal cancer screening, hypertension, blood cholesterol, physician counseling and personal efforts to lower cardiovascular disease risk, history of heart disease, and consumption of alcohol.

Rankings among states do not take into account sampling error and do not necessarily reflect any statistical significance.

A rank of one indicates the state with the highest prevalence of the risk factor, or the highest prevalence of a healthful behavior.

All results are considered estimates for the general adult population of Michigan.

Differences between demographic groups are noted in the text only when they are statistically significant.

All results presented in this report have been weighted and are considered estimates for the general adult population of Michigan. Results are presented by demographic characteristics, and differences between demographic groups are noted, for the most part, only when they are statistically significant.

For each estimate, a 95 percent confidence interval is provided. For example, an estimate of 13.5 percent (±2.5) means that there is a 95 percent probability that the unknown population value lies within the confidence interval (i.e., between 11% to 16%), or alternatively, that upon repeated sampling, 95 percent of all such intervals would include the unknown population value.

In a few cases, the calculated confidence interval lies outside the range of possible numbers (i.e., either under zero percent or over 100%). In these cases, a footnote showing the number of cases is provided. For example, among respondents in households with annual incomes of less than $10,000, 1.7 percent (±2.4) are heavy drinkers (Table 11). The lower limit of this confidence interval falls below zero percent (4.1 to –0.7). The footnote indicates that two of 99 cases in this income category were heavy drinkers. The CI and the actual n of cases are provided to aid the reader in interpretation of estimate.

Injury behaviors (such as safety belt use) are reported in terms of who is at risk (non-use), rather than in terms of engaging in positive behaviors (use). At risk for injury behaviors is defined as not always engaging in positive behavior.

As an aid in evaluating progress and trends in risky and healthful behaviors, some of the 1997 estimates are compared with estimates from previous years and with *Healthy Michigan 2000* objectives. In comparing

current estimates with estimates from previous years, changes over time are primarily discussed in terms of absolute change in the number of percentage points, rather than a relative percentage increase (e.g., an estimate that changed from 10 percent to 15 percent is noted to have increased five percentage points, rather than having increased by 50%).

Another context in which to view Michigan's estimates is provided by comparisons to other states participating in the 1997 Behavioral Risk Factor Surveillance System. The tables and text that refer to "comparisons among states participating in the 1997 BRFSS' refer to the District of Columbia, Puerto Rico, and the 50 states that participated in the 1997 BRFSS. Unless otherwise noted, the comparisons in the tables refer to all 52 participants.

In the tables comparing Michigan with other states, the median prevalence and the range of estimates from all states, as well as Michigan's ranking among the participating states, are presented. The ranking shows the relative placement of the Michigan estimate within the distribution of the estimates from all states that participated in the 1997 BRFSS. These ranks do not take into account sampling error and do not necessarily reflect any statistical significance. Ranking was done from highest to lowest, i.e., a rank of one indicates the state with the highest prevalence of the risk factor, or the highest prevalence of a healthful behavior.

1997 Results and Discussion

Health Care Access

Ninety-two percent (91.9% ±1.2) of all 1997 BRFS respondents reported that they currently had some form of health care coverage. Ninety percent (90.2%) of respondents less than 65 years of age reported that they had health care coverage (Table 1). Ninety-eight percent (97.6% ±1.8) of respondents aged 65 and older reported that they had Medicare coverage.

The proportion of respondents aged 18-64 years with health care coverage increased consistently with increasing age and educational status, and increased quite markedly with increasing household income (75.3% among those in households with less than $10,000 per annum had coverage vs. 97.5 percent of those with household incomes over $50,000).

There has been a decrease since 1991 in the proportion of adults without health care coverage as estimated by the Michigan BRFS (Table 1a).

Compared with other states participating in the 1997 BRFSS, Michigan was among the states with the lowest proportion of adults without health care coverage (Table 1b).

Among respondents of all ages with health care coverage, the distribution of sources of health care coverage was: 70.6 percent (±2.0) employment-related, 3.6 percent (±0.8) self purchased, 24.0 percent (±2.0) government sponsored, and 1.8 percent (±0.6) other.

Of those who had health care coverage, 14.5 percent (±1.6) had had their current coverage for less than one year, 16.9 percent (±1.6) for one to three years, and 68.6 percent (±2.0) for three or more years.

Among those who did not have health care coverage, 41.1 percent (±7.6) reported that they had been without health care coverage for less than a year, while 26.8 percent (±6.7) indicated that they had been without insurance for five or more years.

The majority of insured respondents (59.9%) indicated that their insurance required them to select a certain doctor or clinic for all of their routine care, or that there was a list or book of doctors associated with their plan (Table 1). The proportion of respondents with these indicators of managed health care decreased dramatically with age, and was higher for African Americans than for whites.

About nine percent (8.7%) of all respondents reported that there was a time in the past year when they needed to see a doctor but could not because of the cost (Table 1). This cost barrier decreased with increasing education and increasing household income. This cost barrier was reported more often by females than by males.

More than seven in 10 (72.6%) respondents reported having had a routine checkup in the past year (Table 1). Females and African Americans were more likely to report having had routine checkups in the past year than were males and whites, respectively.

TABLE 1
Health Care Access Indicators
Michigan Adults, 1997
(in percentages with 95% confidence interval limits)

Demographic Characteristics	Had Health Care Coverage Age 18-64 [1] (n = 2158)	Managed Health Care Arrangement [2] (n = 2267)	Cost Prevented Visit [3] (n = 2586)	Routine Checkup in Last Year [4] (n = 2569)
TOTAL	**90.2 ± 1.4**	**59.9 ± 2.2**	**8.7 ± 1.2**	**72.6 ± 2.0**
AGE				
18-24 Years	83.3 ± 4.9	72.4 ± 7.1	9.4 ± 3.7	72.6 ± 5.9
25-34 Years	87.5 ± 3.1	73.6 ± 4.5	11.5 ± 2.9	63.4 ± 4.5
35-44 Years	89.6 ± 2.5	71.3 ± 4.1	12.3 ± 2.7	64.5 ± 4.1
45-54 Years	95.9 ± 2.0	62.7 ± 5.1	7.7 ± 2.7	74.6 ± 4.5
55-64 Years	95.6 ± 2.4	56.0 ± 6.5	5.8 ± 2.7	81.7 ± 4.7
65-74 Years	- -	22.4 ± 6.1	2.6 ± 2.0	87.0 ± 4.7
75+ Years	- -	23.5 ± 6.7	3.1 ± 2.4	84.7 ± 5.7
GENDER				
Male	88.9 ± 2.2	60.5 ± 3.3	6.6 ± 1.6	64.9 ± 3.1
Female	91.4 ± 1.8	59.3 ± 2.9	10.5 ± 1.6	79.3 ± 2.2
RACE				
White	90.8 ± 1.6	57.2 ± 2.4	7.7 ± 1.2	71.7 ± 2.2
Black	88.6 ± 4.5	76.0 ± 5.9	12.0 ± 4.1	80.2 ± 5.1
EDUCATION				
Less than H.S.	77.3 ± 6.9	53.8 ± 7.1	13.9 ± 4.5	74.7 ± 5.5
H.S. Graduate	88.2 ± 2.7	59.2 ± 3.9	9.7 ± 2.2	74.2 ± 3.1
Some College	90.9 ± 2.4	62.4 ± 3.9	8.7 ± 2.2	70.3 ± 3.5
College Graduate	96.1 ± 1.6	60.4 ± 4.3	4.5 ± 1.8	71.3 ± 3.9
HOUSEHOLD INCOME				
<$10,000	75.3 ± 11.8	58.8 ±12.7	14.8 ± 7.3	76.5 ± 9.6
$10,000-19,999	71.2 ± 7.1	46.3 ± 6.7	14.6 ± 3.9	77.9 ± 4.9
$20,000-34,999	84.9 ± 3.3	55.2 ± 4.3	9.7 ± 2.4	70.6 ± 3.7
$35,000-50,000	94.5 ± 2.4	63.9 ± 4.9	8.2 ± 2.7	73.4 ± 4.3
>$50,000	97.5 ± 1.4	67.3 ± 3.7	4.2 ± 1.6	69.7 ± 3.7

[1] Proportion of respondents age 18-64 who reported they had any kind of health care coverage.
[2] Proportion of insured respondents who reported either: (1) a list or book of doctors associated with their plan or (2) having to select a certain doctor or clinic for all of their routine care.
[3] Proportion of respondents who reported that there was a time during the previous 12 months when they needed to see a doctor but could not because of the cost.
[4] Proportion of respondents who reported that they had had a routine checkup within the past year.

TABLE 1a
COMPARISONS ACROSS SURVEY YEARS
IN MICHIGAN
(in percentages with 95% confidence interval limits)

	No Health Care Plan (Age 18+)
1991	11.6 ±1.5
1992	12.3 ±1.6
1993	9.6 ±1.3
1994	9.6 ±1.4
1995	9.0 ±0.9
1996	9.0 ±0.9
1997	8.1 ±1.2

TABLE 1b
COMPARISONS WITH ALL STATES THAT
PARTICIPATED IN THE 1997 BRFS

	No Health Care Plan (Age 18-64)
Michigan's Prevalence	9.8% ±1.4
Median Prevalence in Participating States	12.0%
Range of Prevalence in Participating States	6.4-24.2%
Michigan's Rank*	43

* Rank 1 = highest proportion of uninsured

Health Status

The Michigan BRFS included a module on health status with questions on perceived general health, and the number of days in the previous 30 during which the respondent's physical health was not good, their mental health was not good, and during which the respondent's usual activities were limited because of poor physical or mental health.

Thirteen percent (13.1% ±1.4) of respondents in the 1997 BRFS reported that in general their health was either fair or poor (Table 2), 28.1 percent (±2.0) said their health was good, 36.7 percent (±2.0) said their health was very good, and 22.1 percent (±1.8) said their health was excellent.

Respondents reported that in the past 30 days their physical health was not good an average of 3.3 days and that their mental health was not good an average of 3.3 days (Table 2).

Respondents reported that during the past 30 days, poor physical or mental health kept them from doing their usual activities (such as self-care, work, or recreation) an average of 1.7 days (Table 2).

The proportion of respondents who reported poor or fair general health increased with increasing age. The mean number of poor physical health days and the mean number of limited activity days also increased with increasing age.

On average, females reported more days of poor physical health and more days of poor mental health, compared with males.

A higher proportion of African Americans than whites reported fair or poor general health. On average, African Americans reported more poor mental health days and more days of limited activity than whites.

The proportion of respondents who reported fair or poor general health decreased with increasing formal education. The mean number of poor physical health days, poor mental health days, and limited activity days tended to decrease with increasing levels of education.

The proportion of respondents who reported fair or poor general health decreased with increasing annual household income. The mean number of poor physical health days, and limited activity days consistently decreased with increasing levels of household income. There have been no changes since 1993 in perceived general health, mean days when physical health was not good, mean days when mental health was not good, and limited activity (Table 2a).

Compared with other states participating in the 1997 BRFSS, Michigan ranked near the median in the proportion of adults with perceived fair or poor general health (Table 2b). This indicates a similar proportion of adults with poor or fair general health, relative to residents of other states. Michigan ranked near the median for mean days when physical health was not good. Michigan ranked in the 1st (highest) quartile, however, in the proportion of adults with days in the past month when mental health was not good, indicating a high proportion of adults with this relative to residents of other states.

TABLE 2
Health Status Indicators
Michigan Adults, 1997
(percentages and means, with 95% confidence interval limits)

Demographic Characteristics	General Health Fair or Poor [1] (in percent) (n = 2614)	Physical Health Not Good [2] (mean days) (n = 2579)	Mental Health Not Good [3] (mean days) (n = 2559)	Limited Activity [4] (mean days) (n = 2579)
TOTAL	**13.1 ± 1.4**	**3.3 ± 0.4**	**3.3 ± 0.4**	**1.7 ± 0.2**
AGE				
18-24 Years	6.9 ± 3.3	1.7 ± 0.6	3.5 ± 0.8	1.4 ± 0.6
25-34 Years	5.2 ± 2.2	2.2 ± 0.6	3.8 ± 0.8	1.3 ± 0.4
35-44 Years	9.0 ± 2.4	2.7 ± 0.6	3.9 ± 0.6	1.3 ± 0.4
45-54 Years	12.3 ± 3.3	2.9 ± 0.6	3.9 ± 0.8	1.7 ± 0.6
55-64 Years	16.7 ± 4.3	4.0 ± 1.0	1.7 ± 0.6	2.0 ± 0.8
65-74 Years	30.9 ± 6.5	5.6 ± 1.6	2.3 ± 1.0	2.2 ± 1.0
75+ Years	28.6 ± 6.7	7.6 ± 1.8	2.3 ± 1.2	3.1 ± 1.4
GENDER				
Male	12.3 ± 2.2	2.5 ± 0.4	2.7 ± 0.4	1.5 ± 0.4
Female	13.7 ± 2.0	3.9 ± 0.4	3.8 ± 0.4	1.9 ± 0.4
RACE				
White	11.1 ± 1.4	3.1 ± 0.4	3.1 ± 0.4	1.5 ± 0.2
Black	23.4 ± 5.5	3.7 ± 1.0	4.7 ± 1.2	2.7 ± 1.0
EDUCATION				
Less than H.S.	33.1 ± 6.1	6.2 ± 1.4	4.8 ± 1.2	3.5 ± 1.0
H.S.Graduate	14.6 ± 2.5	3.2 ± 0.6	3.5 ± 0.6	1.8 ± 0.4
Some College	9.1 ± 2.2	2.9 ± 0.6	3.2 ± 0.6	1.3 ± 0.4
College Graduate	4.6 ± 1.6	2.3 ± 0.6	2.4 ± 0.4	1.0 ± 0.4
HOUSEHOLD INCOME				
<$10,000	38.1 ±10.8	7.1 ± 2.4	5.2 ± 2.2	4.7 ± 2.2
$10,000-19,999	28.6 ± 5.3	5.5 ± 1.2	4.3 ± 1.0	2.9 ± 1.0
$20,000-34,999	13.3 ± 2.7	3.3 ± 0.6	3.1 ± 0.6	1.5 ± 0.4
$35,000-50,000	9.1 ± 2.9	2.2 ± 0.6	3.0 ± 0.8	1.1 ± 0.4
>$50,000	3.5 ± 1.4	2.0 ± 0.4	3.1 ± 0.6	1.1 ± 0.4

[1] Proportion of respondents who said that their health, in general, was fair or poor.
[2] Mean number of days during the past 30 days in which physical health (including illness and injury) was not good.
[3] Mean number of days during the past 30 days in which mental health (including stress, depression, and problems with emotions) was not good.
[4] Mean number of days during the past 30 days in which poor physical or mental health kept respondent from doing usual activities, such as self-care, work, or recreation.

TABLE 2a
COMPARISONS ACROSS SURVEY YEARS IN MICHIGAN

	General Health Fair or Poor (percent)	Physical Health Not Good (mean days)	Mental Health Not Good (mean days)	Activities Limited (mean days)
1993	13.1 ±1.4	2.9 ±0.3	3.2 ±0.3	1.5 ±0.2
1994	13.5 ±1.5	3.1 ±0.3	3.6 ±0.3	1.9 ±0.3
1995	14.2 ±1.0	3.1 ±0.3	3.4 ±0.3	1.8 ±0.3
1996	13.0 ±1.0	2.8 ±0.3	3.3 ±0.3	1.6 ±0.2
1997	13.1 ±1.4	3.3 ±0.4	3.3 ±0.4	1.7 ±0.2

TABLE 2b
COMPARISONS WITH ALL STATES
THAT PARTICIPATED IN THE 1997 BRFS

	General Health Fair or Poor	Physical Health Not Good (mean days)	Mental Health Not Good (mean days)
Michigan's Prevalence	13.1% ± 1.4	3.3% ± 0.4	3.3% ± 0.4
Median Prevalence in Participating States	13.0%	3.1%	2.9%
Range of Prevalence in Participating States	9.5-35.0%	1.1-4.1%	1.5-4.9%
Michigan's Rank*	28	14**	9***

* Rank 1 = highest prevalence
** Tied for 14th with two other states
*** Tied for 9th with three other states

Cardiovascular Disease

Of Michigan adults aged 35 and older, 11.1 percent (±1.6) reported that they had been told by a doctor that they had had a heart attack, myocardial infarction, angina, coronary heart disease, or a stroke. The proportion of Michigan adults aged 35 and older estimated to have ever had the following CVD conditions were as follows: heart attack or myocardial infarction, 7.2 percent; angina or coronary heart disease, 5.1 percent; and stroke, 3.1 percent (Table 3).

Older people, those with lower household incomes, and those with less than a high school education were more likely to have been told they had any of these heart conditions.

TABLE 3
Cardiovascular Disease Indicators
Respondents Over 34 Years of Age
Michigan, 1997
(in percentages with 95% confidence interval limits)

Demographic Characteristics	Ever Told Had Heart Attack or Myocardial Infarction[1] (n = 1729)	Ever Told Had Angina or Coronary Heart Disease[2] (n = 1724)	Ever Told Had Stroke[3] (n = 1735)
TOTAL	7.2 ± 1.4	5.1 ± 1.2	3.1 ± 1.0
AGE			
35-44 Years	1.1 ± 0.8	0.8 ± 0.8	1.1 ± 0.8
45-54 Years	3.8 ± 2.0	3.6 ± 1.8	0.5 ± 0.8[4]
55-64 Years	8.4 ± 3.5	6.9 ± 2.9	2.6 ± 2.0
65-74 Years	18.4 ± 5.7	9.5 ± 4.1	5.6 ± 3.3
75+ Years	17.2 ± 5.7	13.8 ± 5.1	13.1 ± 5.3
GENDER			
Male	8.4 ± 2.2	5.8 ± 1.8	2.4 ± 1.2
Female	6.2 ± 1.6	4.5 ± 1.2	3.8 ± 1.4
RACE			
White	7.1 ± 1.4	5.3 ± 1.2	2.8 ± 1.0
Black	7.6 ± 4.1	3.9 ± 3.1	5.5 ± 3.5
EDUCATION			
Less than High School	19.1 ± 6.1	10.6 ± 4.5	8.9 ± 4.1
High School Graduate	7.4 ± 2.2	5.9 ± 2.0	1.9 ± 1.2
Some College	5.0 ± 2.2	4.3 ± 1.8	3.1 ± 1.6
College Graduate	3.2 ± 1.8	2.2 ± 1.4	2.0 ± 1.6
HOUSEHOLD INCOME			
<$10,000	22.0 ± 9.8	17.2 ± 8.2	8.6 ± 7.1
$10,000-19,999	13.8 ± 4.7	11.1 ± 4.3	6.5 ± 3.5
$20,000-34,999	8.8 ± 3.1	4.9 ± 2.2	2.6 ± 1.6
$35,000-50,000	6.2 ± 3.3	5.6 ± 2.9	1.9 ± 2.0[5]
>$50,000	2.5 ± 1.4	2.3 ± 1.4	0.8 ± 0.8

[1] Proportion of respondents age 35 or older who reported that they had ever been told by a doctor that they had a heart attack or myocardial infarction.
[2] Proportion of respondents age 35 or older who reported that they had ever been told by a doctor that they had angina or coronary heart disease.
[3] Proportion of respondents age 35 or older who reported that they had ever been told by a doctor that they had a stroke.
[4] Confidence interval (95%) exceeds range of possible estimates (2/429).
[5] Confidence interval (95%) exceeds range of possible estimates (4/290).

Preventive CVD Counseling

Respondents were asked a series of questions regarding preventive CVD counseling by a physician. Respondents were asked if they had received advice from a physician about changing specific behaviors to lower the risk of developing heart disease and stroke. More than one in three respondents were told by a doctor to eat fewer high fat or high cholesterol foods and nearly four in 10 were told to exercise more. About seven in 10 current smokers had been advised by a doctor to quit smoking. Six in 10 respondents (60.2% ±2.0) were given some type of advice by a doctor designed to lower the risk of cardiovascular disease.

Proportion advised by a doctor to lower the risk of cardiovascular disease by…

Percent	CI	
31.6	± 2.0	… eating fewer high fat or high cholesterol foods (among all respondents)
24.1	± 1.8	… losing weight (among all respondents)
50.6	± 3.7	… losing weight (among overweight respondents)
37.9	± 2.2	… exercising more, being more physically active (among all respondents)
62.0	± 4.3	… taking medications specifically to reduce high blood pressure (among those ever told blood pressure was high)
15.0	± 2.2	… taking medications specifically to reduce high blood cholesterol (among those ever told blood cholesterol was high)
70.9	±3.7	… quitting smoking (among current smokers)

Respondents over age 34 were also asked about aspirin consumption. Nearly one-quarter (22.8% ±2.2) took aspirin daily or every other day to lower the risk of heart disease or stroke. Among those over age 34 who took aspirin daily or every other day, the majority (87.7%±3.5) took fewer than 1.5 aspirin tablets per day; the average number of aspirins consumed was 1.1 (±0.04) per day. Among respondents over age 34 who took aspirin daily or every other day for the purpose of lowering the risk of heart disease or stroke, 56.1 percent (±5.3) reported that their doctor had advised this. Reasons for taking aspirin regularly are outlined below.

Reason for Aspirin Use	Percent	CI
Already had heart attack or stroke	19.3	±4.3
At high risk of heart attack or stroke	15.2	±3.7
Wanted to reduce risk	58.4	±5.3
Other reason	7.1	±2.7

Blood Pressure

Nearly all respondents (94.9%) had had their blood pressure checked within the past two years (Table 4). Gender and race were related to this indicator, with females and African-Americans being more likely to have had their blood pressure tested in the past two years than were males and whites, respectively.

Among all respondents, almost one-quarter (23.3%) had ever been told by a health professional that their blood pressure was high, and 17.6 percent had been told this two or more times (Table 4). Age was related these indicators; the prevalence of ever being told blood pressure was high (both once and more than once) increased with increasing age.

The prevalence of having been told blood pressure was high was inversely related to education and household income. Those with less education were more likely to have been told that they had high blood pressure, and specifically those with less than a high school education were more likely to have been told two or more times that they had high blood pressure, compared with respondents with more education. Those with household incomes under $35,000 annually were more likely to have been told two or more times that they had high blood pressure.

Of respondents who had ever been told that their blood pressure was high, 60.2 percent (4.3) reported that they were currently taking blood pressure medication specifically to reduce high blood pressure (Figure 1).

The proportion of adults in Michigan who had ever been told they had high blood pressure has not changed since 1989 (Table 4a).

Compared with other states participating in the 1997 BRFSS, Michigan was near the median in the prevalence of adults who had ever been told they had high blood pressure (Table 4b).

TABLE 4
High Blood Pressure Indicators
Michigan Adults, 1997
(in percentages with 95% confidence interval limits)

Demographic Characteristics	Blood Pressure Checked Within Two Years [1] (n = 2582)	Ever Told High Blood Pressure [2] (n = 2583)	Told Blood Pressure High Twice or More [3] (n = 2576)
TOTAL	**94.9 ± 1.0**	**23.3 ± 1.8**	**17.6 ± 1.6**
AGE			
18-24 Years	95.3 ± 2.9	9.7 ± 4.1	6.1 ± 3.3
25-34 Years	92.8 ± 2.4	8.5 ± 2.5	4.0 ± 1.8
35-44 Years	93.8 ± 2.2	16.6 ± 3.1	9.9 ± 2.4
45-54 Years	94.9 ± 2.4	27.7 ± 4.5	22.2 ± 4.3
55-64 Years	98.3 ± 1.4	42.2 ± 6.1	33.9 ± 5.9
65-74 Years	96.5 ± 2.9	45.8 ± 7.1	38.3 ± 6.9
75+ Years	96.2 ± 3.1	39.7 ± 7.4	36.3 ± 7.3
GENDER			
Male	93.4 ± 1.6	21.8 ± 2.7	16.0 ± 2.4
Female	96.2 ± 1.0	24.8 ± 2.4	19.1 ± 2.2
RACE			
White	94.3 ± 1.2	22.6 ± 2.0	17.7 ± 1.8
Black	98.3 ± 1.4	28.6 ± 5.7	17.7 ± 4.7
EDUCATION			
Less than High School	93.3 ± 3.1	36.1 ± 6.1	29.0 ± 5.7
High School Graduate	95.0 ± 1.6	25.2 ± 3.1	18.9 ± 2.7
Some College	94.9 ± 1.8	20.3 ± 2.9	14.5 ± 2.5
College Graduate	95.5 ± 1.8	17.6 ± 3.1	13.5 ± 2.9
HOUSEHOLD INCOME			
<$10,000	87.7 ± 8.0	28.3 ± 9.4	20.7 ± 8.6
$10,000-19,999	96.3 ± 2.2	28.2 ± 5.3	22.5 ± 4.7
$20,000-34,999	91.6 ± 2.4	24.9 ± 3.5	19.6 ± 3.1
$35,000-50,000	97.4 ± 1.8	20.1 ± 3.9	12.9 ± 3.3
>$50,000	95.8 ± 1.6	19.4 ± 3.1	14.3 ± 2.7

[1] Proportion of respondents who reported having had their blood pressure checked within the past two years.
[2] Among all respondents, the proportion who reported that they had ever been told by a health professional that their blood pressure was high.
[3] Among all respondents, the proportion who been told on more than one occasion that their blood pressure was high.

FIGURE 1
Michigan Adults, 1997

High Blood Pressure Indicators

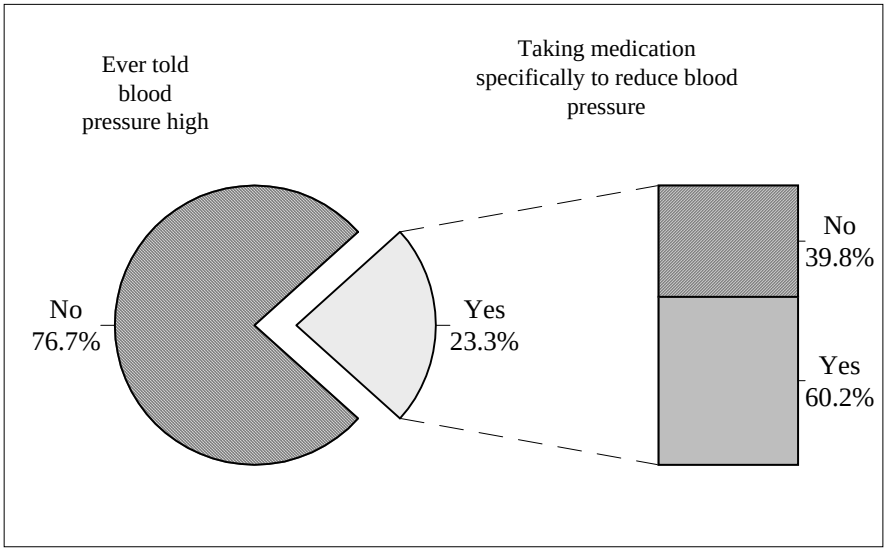


TABLE 4a
COMPARISONS ACROSS SURVEY YEARS IN MICHIGAN
(in percentages with 95% confidence interval limits)

	Ever Told Blood Pressure High
1989	23.3 ±2.0
1990	23.3 ±1.8
1991	24.1 ±1.9
1992	23.2 ±1.8
1993	21.8 ±1.7
1995	23.5 ±1.3
1996	23.8 ±1.8
1997	23.3 ±1.8

No data collected in 1994

TABLE 4b
COMPARISONS WITH ALL STATES THAT PARTICIPATED IN THE 1997 BRFS

	Ever Told Blood Pressure High
Michigan's Prevalence	23.3% ±1.8
Median Prevalence in Participating States	23.0%
Range of Prevalence in Participating States	16.3-34.4 %
Michigan's Rank*	22**

* Rank 1 = highest prevalence of ever told high blood pressure
** Tied for 22nd with another state

Cholesterol

Among all respondents in the 1997 BRFS, about three-quarters (75.9%) reported that they had ever had their cholesterol checked, and 71.3 percent had had their cholesterol checked within the past five years (Table 5). Among those tested, 31.2 percent reported having ever been told by a health professional that their cholesterol was high (Figure 2), which represents 23.6 percent (±1.8) of all respondents.

Age was related to all three cholesterol indicators, with younger respondents being less likely to have ever had their cholesterol checked, and to have had it checked within five years, compared with older respondents (although there was a slight drop off for respondents over age 64). Similarly, the proportion of respondents who had ever been told by a health professional that their cholesterol was high increased with age. A slightly higher proportion of females than males reported having ever had their cholesterol level checked, and having had it checked within five years.

Education was related to the prevalence of all three cholesterol indicators. Respondents who had more education were more likely to have ever had their cholesterol tested, and to have had it tested within five years, but were less likely to have ever been told by a health professional that their cholesterol was high, compared with respondents who had less education. The proportion of respondents who reported having ever had their cholesterol tested rose with increasing levels of annual household income.

Among respondents who had ever been told they had high blood cholesterol, 27.1 percent (±3.9) were currently taking medication specifically to reduce high cholesterol.

There has been a steady increase in the proportion of adults in Michigan who have ever had their cholesterol checked, rising 18.0 percentage points since 1988. Although the proportion of those tested who have ever been told their cholesterol was high increased between 1988 and 1997 in Michigan, there has been no consistent linear trend overall (Table 5a).

Compared with other states participating in the 1997 BRFSS, Michigan was in the first quartile in the prevalence of adults who had ever been told they had high blood pressure, indicating a high proportion of adults in this situation relative to adult residents of other states (Table 5b).

The proportion of Michigan adults who have had their cholesterol checked in the last five years is approaching the goal of 75 percent set out in the *Healthy Michigan 2000* objectives (Table 5c).

TABLE 5
Cholesterol Indicators
Michigan Adults, 1997
(in percentages with 95% confidence interval limits)

Demographic Characteristics	Cholesterol Ever Checked [1] (n = 2554)	Checked Within Past Five Years [2] (n = 2541)	Ever Told Cholesterol was High [3] (n = 1965)
TOTAL	**75.9 ± 1.8**	**71.3 ± 2.0**	**31.2 ± 2.2**
AGE			
18-24 Years	40.1 ± 6.7	37.0 ± 6.7	14.5 ± 6.9
25-34 Years	59.5 ± 4.5	53.0 ± 4.7	17.9 ± 4.5
35-44 Years	77.5 ± 3.5	71.9 ± 3.7	24.2 ± 4.1
45-54 Years	88.8 ± 3.1	84.9 ± 3.7	35.2 ± 5.1
55-64 Years	96.3 ± 2.2	94.7 ± 2.5	44.3 ± 6.3
65-74 Years	93.7 ± 3.5	91.1 ± 4.3	44.3 ± 7.3
75+ Years	89.3 ± 4.7	82.9 ± 5.7	37.6 ± 8.0
GENDER			
Male	71.8 ± 2.9	67.1 ± 3.1	31.8 ± 3.5
Female	79.5 ± 2.2	75.2 ± 2.4	30.7 ± 2.9
RACE			
White	76.9 ± 2.0	71.9 ± 2.2	31.9 ± 2.4
Black	71.2 ± 5.9	69.2 ± 6.1	27.1 ± 6.7
EDUCATION			
Less than High School	68.7 ± 5.9	64.4 ± 6.1	40.7 ± 7.6
High School Graduate	73.6 ± 3.3	69.5 ± 3.3	33.5 ± 3.9
Some College	74.4 ± 3.5	70.2 ± 3.5	29.4 ± 4.1
College Graduate	84.3 ± 3.1	78.5 ± 3.5	26.9 ± 3.9
HOUSEHOLD INCOME			
<$10,000	69.8 ± 10.6	66.7 ± 11.0	41.2 ± 12.7
$10,000-19,999	71.5 ± 5.3	66.9 ± 5.5	36.3 ± 6.7
$20,000-34,999	72.0 ± 3.7	67.5 ± 3.9	34.0 ± 4.5
$35,000-50,000	75.8 ± 4.3	71.7 ± 4.5	25.4 ± 4.9
>$50,000	82.0 ± 3.1	76.4 ± 3.5	29.4 ± 3.9

[1] Proportion of respondents who reported ever having had their cholesterol checked.
[2] Proportion of respondents who reported having had their cholesterol checked within the previous five years.
[3] Of respondents who had ever had their cholesterol checked, the proportion who had been told by a health professional that their cholesterol was high.

FIGURE 2
Michigan Adults, 1997

Cholesterol Indicators

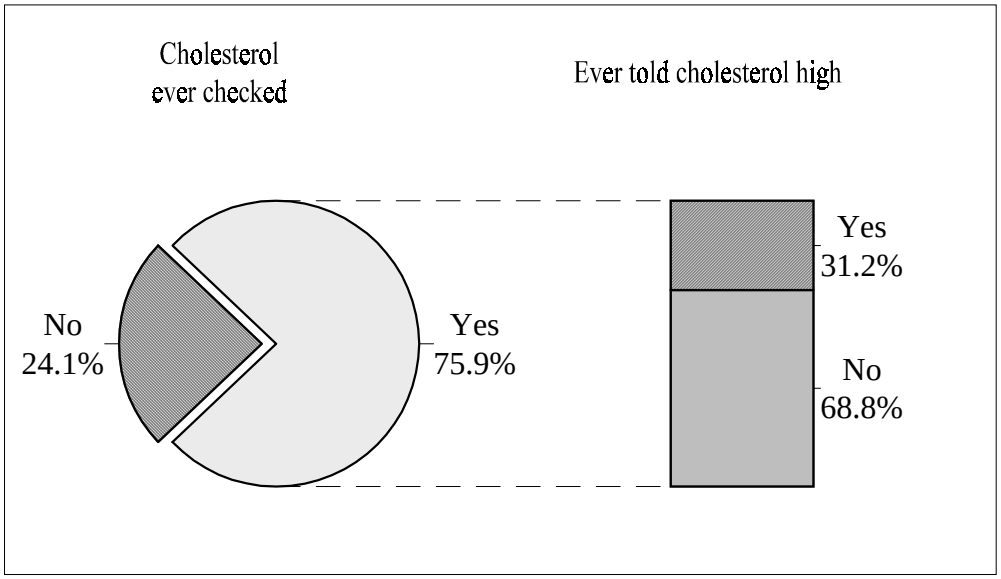


TABLE 5a
COMPARISONS ACROSS SURVEY YEARS
IN MICHIGAN
(in percentages with 95% confidence interval limits)

	Cholesterol Ever Checked	Ever Told Cholesterol High*
1988	57.9 ±2.9	26.9 ±2.6
1989	61.8 ±2.4	28.8 ±2.7
1990	65.8 ±2.2	27.0 ±2.3
1991	70.1 ±2.1	31.5 ±2.4
1992	70.3 ±2.1	26.8 ±2.3
1993	71.4 ±2.1	30.3 ±2.3
1995	75.3 ±1.3	31.4 ±1.6
1996	78.5 ±1.8	30.1 ±2.2
1997	75.9 ±1.8	31.2 ±2.2

* Among those tested
No data collected in 1994

TABLE 5b
COMPARISONS WITH ALL STATES THAT PARTICIPATED IN THE 1997 BRFS

	Ever Told Cholesterol High (Among Those Tested)
Michigan's Prevalence	31.2% ±2.2
Median Prevalence in Participating States	28.7%
Range of Prevalence in Participating States	18.2-34.3%
Michigan's Rank*	8**

* Rank 1 = highest prevalence of ever told cholesterol high
** Tied for 8th with another state

TABLE 5c
COMPARISONS WITH HEALTH OBJECTIVES

Healthy Michigan 2000 Objective	1996 Michigan Prevalence
Increase to at least 75% the proportion of adults who have had their blood cholesterol checked within the preceding five years.	71.3% (±2.0) of Michigan adults have had their cholesterol checked within the past five years.

Diabetes

Nearly six percent (5.9%) of all respondents in the 1997 BRFS had been told by a doctor that they had diabetes, other than during pregnancy (Table 6). The prevalence of being told one had diabetes increased with age. Education and household income, however, were inversely related to being told one had diabetes; the prevalence of being told one had diabetes decreased with increasing education and with increasing household income.

There has been no consistent trend since 1989 in the proportion of adults in Michigan who have ever been told they have diabetes (Table 6a).

Compared with other states participating in the 1997 BRFSS, Michigan's prevalence ranked in first quartile, indicating a high proportion of adults who have ever been told they have diabetes compared with other states (Table 6b).

In the 1997 Behavior Risk Factor Survey, we asked respondents who had been diagnosed with diabetes a series of follow-up questions about their care and about potential problems associated with diabetes. Diagnosed diabetic respondents reported that they had been diagnosed at 46 years of age (46.4 ±3.1), on average.

More than one-third (34.4% ±8.0) of respondents who had been told that they had diabetes were currently taking insulin. Of those who were taking insulin, 38.4 percent (±14.5) were doing so once per day or less frequently and 61.6 percent (±14.5) more than once per day.

Nearly one in three diabetic respondents (30.1% ±7.4) had ever heard of glycosylated hemoglobin. Of those who had ever heard of glycosylated hemoglobin and had seen a health professional in the past year, 90.0 percent (±9.8) said a health professional had checked them for glycosylated hemoglobin in the last year, and that this occurred an average of 3.2 (±1.0) times within the past year.

Nearly nine in ten diabetic respondents (87.4% ±5.5) reported seeing a health care professional in the past year, and 77.3 percent (±7.1) had seen a doctor two or more times in the past year. The average number of doctor visits was 3.0 (±0.4) times per year.

Of diagnosed diabetic respondents who saw a health care professional in the past year, half (49.0% ±9.4) reported that their health care professional checked their feet for sores or irritations two or more times in the past year; the average number of times was 1.9 (±0.4) times per year.

Nearly seven in 10 (69.2% ±7.8) respondents with diabetes reported having had an eye exam within the past year. Several questions were asked regarding the ability to see (with their eyeglasses or contact lenses, when applicable). More than half (53.6% ±8.4) said they had no visual limitations in recognizing objects across a street, 51.4% (±8.4) had no visual limitations in reading a newspaper, and 75.2 percent (±7.4) had no visual limitations in watching television. Nearly four in ten (38.9% ±8.4) reported having none of these types of visual limitations with their eyeglasses on.

About seven in 10 (72.2% ±8.0) respondents with diagnosed diabetes reported having ever seen a dietitian or nutritionist about meal planning. Of those who had seen a dietitian, 47.5 percent (±9.8) had seen a dietitian within the past year.

TABLE 6
Diabetes Indicator
Michigan Adults, 1997
(in percentages with 95% confidence interval limits)

Demographic Characteristics	Ever Told Have Diabetes [1] (n = 2581)
TOTAL	**5.9 ± 1.0**
AGE	
18-24 Years	1.5 ± 1.6
25-34 Years	1.9 ± 1.2
35-44 Years	2.3 ± 1.2
45-54 Years	5.6 ± 2.2
55-64 Years	12.0 ± 4.1
65-74 Years	16.3 ± 5.3
75+ Years	13.2 ± 5.1
GENDER	
Male	5.3 ± 1.4
Female	6.5 ± 1.4
RACE	
White	5.6 ± 1.0
Black	8.6 ± 3.5
EDUCATION	
Less than High School	10.7 ± 3.9
High School Graduate	6.6 ± 1.8
Some College	5.6 ± 1.8
College Graduate	3.1 ± 1.6
HOUSEHOLD INCOME	
<$10,000	11.4 ± 5.9
$10,000-19,999	9.4 ± 3.5
$20,000-34,999	7.5 ± 2.2
$35,000-50,000	3.8 ± 2.0
>$50,000	3.5 ± 1.4

[1] Proportion of respondents who reported that they had ever been told by a doctor that they had diabetes (gestational diabetes excluded).

TABLE 6a
COMPARISONS ACROSS SURVEY YEARS
IN MICHIGAN
(in percentages with 95% confidence interval limits)

	Ever Told Had Diabetes
1989	6.4 ±1.1
1990	4.8 ±0.9
1991	5.5 ±1.0
1992	5.4 ±1.0
1993	5.5 ±1.0
1994	4.7 ±0.9
1995	5.4 ±0.7
1996	5.3 ±0.7
1997	5.9 ±1.0

TABLE 6b
COMPARISONS WITH ALL STATES THAT
PARTICIPATED IN THE 1997 BRFS

	Ever Told Had Diabetes
Michigan's Prevalence	5.9% ±1.0
Median Prevalence in Participating States	4.8%
Range of Prevalence in Participating States	3.0-10.5%
Michigan's Rank*	10

* Rank 1 = highest prevalence

Tobacco Use

In the 1997 BRFS, about half of all respondents (51.2%) reported that they had smoked at least 100 cigarettes in their life, and 26.2 percent reported that they currently smoked cigarettes (Table 7). Among all respondents, 21.3 percent (±1.8) were current daily smokers, and 4.9 (±1.0) were intermittent smokers, meaning that they smoked some days rather than daily.

There was a relationship between age and current smoking, with more than three in 10 respondents under age 45 currently smoking, decreasing to about 6 percent of respondents over age 74. Males were more likely to be current smokers than were females. The prevalence of current smoking was inversely related to education; the proportion of respondents who reported being current smokers decreased as education increased. While not statistically significant, there appears to be a similar inverse relationship between current smoking and household income level.

There has been no significant change in the prevalence of smoking in Michigan since the early 1990s (Table 7a).

Michigan is still almost four percentage points from reaching the *Healthy Michigan 2000* objective of 22.3 percent or fewer adults smoking (Table 7b).

Compared with other states participating in the 1997 BRFSS, Michigan ranked in the first quartile, indicating that a higher proportion of adults in Michigan currently smoked cigarettes in 1997 relative to adults in other states (Table 7c).

Among current (daily and intermittent) smokers, the mean number of cigarettes smoked daily (or on days they smoked) was 16.8 (Table 8). Among intermittent smokers, the mean number of cigarettes smoked on the days they smoked was 6.5 (±1.4). Of current smokers, 7.6 percent reported that they smoked two or more packs (heavy smokers) of cigarettes per day. The mean number of cigarettes smoked per day was lower for smokers under age 34, for women smokers, and for African-American smokers, compared with smokers aged 35 and older, men smokers, and white smokers, respectively.

Among former smokers, 16.8 percent (±3.1) reported that it had been two years or less since they had last smoked regularly, and 39.7 percent (±4.1) of former smokers said that it had been 15 or more years since they had last smoked cigarettes regularly (Figure 3).

Among current daily smokers, 52.1 percent (±4.5) reported that they had quit smoking for at least one day sometime in the past year. Among current (daily and intermittent) smokers, 40.9 percent (±3.9) reported that they were currently trying to quit smoking.

TABLE 7
Cigarette Smoking Status
Michigan Adults, 1997
(in percentages with 95% confidence interval limits)

Demographic Characteristics	Current Smoker [1] (n = 2583)	Former Smoker [2] (n = 2583)	Never Smoker (n = 2583)
TOTAL	**26.2 ± 1.8**	**25.0 ± 1.8**	**48.8 ± 2.2**
AGE			
18-24 Years	31.7 ± 6.1	6.1 ± 2.9	62.2 ± 6.5
25-34 Years	33.0 ± 4.3	14.2 ± 3.1	52.8 ± 4.5
35-44 Years	32.5 ± 3.9	21.8 ± 3.5	45.7 ± 4.1
45-54 Years	25.4 ± 4.3	32.5 ± 4.7	42.1 ± 5.1
55-64 Years	21.5 ± 5.1	41.0 ± 6.1	37.4 ± 5.9
65-74 Years	12.9 ± 4.5	39.1 ± 6.9	48.0 ± 7.1
75+ Years	6.4 ± 3.3	37.0 ± 7.4	56.7 ± 7.6
GENDER			
Male	29.6 ± 2.9	28.3 ± 2.9	42.1 ± 3.1
Female	23.1 ± 2.2	21.9 ± 2.2	54.9 ± 2.7
RACE			
White	26.3 ± 2.0	25.8 ± 2.0	47.9 ± 2.4
Black	24.8 ± 5.5	19.3 ± 5.1	55.8 ± 6.3
EDUCATION			
Less than High School	35.7 ± 6.1	32.6 ± 5.9	31.7 ± 5.9
High School Graduate	31.2 ± 3.3	25.0 ± 3.1	43.8 ± 3.5
Some College	27.4 ± 3.3	22.7 ± 3.1	49.8 ± 3.9
College Graduate	12.8 ± 2.7	24.0 ± 3.5	63.2 ± 3.9
HOUSEHOLD INCOME			
<$10,000	31.2 ± 10.0	22.0 ± 9.2	46.7 ±11.0
$10,000-19,999	31.0 ± 5.3	24.6 ± 5.1	44.4 ± 5.9
$20,000-34,999	27.6 ± 3.5	23.6 ± 3.3	48.8 ± 4.1
$35,000-50,000	28.4 ± 4.3	25.6 ± 4.3	46.0 ± 4.9
>$50,000	21.0 ± 3.1	28.2 ± 3.5	50.8 ± 3.9

[1] Proportion of respondents who affirmed that they had ever smoked at least 100 cigarettes in their life and that they smoke cigarettes now.
[2] Proportion of respondents who affirmed that they had ever smoked at least 100 cigarettes in their life but that they do not smoke cigarettes now.

TABLE 7a
COMPARISONS ACROSS SURVEY YEARS IN MICHIGAN
(in percentages with 95% confidence interval limits)

	Current Smoking
1987	28.9 ±2.0
1988	26.7 ±2.6
1989	28.3 ±2.0
1990	29.2 ±2.0
1991	27.9 ±2.0
1992	25.5 ±2.0
1993	25.0 ±1.9
1994	25.4 ±2.0
1995	25.9 ±1.3
1996	25.6 ±1.3
1997	26.2 ±1.8

TABLE 7b
COMPARISONS WITH HEALTH OBJECTIVES

Healthy Michigan 2000 Objective	1997 Michigan Prevalence
Reduce adult smoking prevalence to 22.3% or less.	26.2% (±1.8) of Michigan adults are current smokers.

TABLE 7c
COMPARISONS WITH ALL STATES THAT PARTICIPATED IN THE 1997 BRFS

	Current Smoking
Michigan's Prevalence	26.2% ±1.8
Median Prevalence in Participating States	23.2%
Range of Prevalence in Participating States	13.8-30.7%
Michigan's Rank*	10

* Rank 1 = highest prevalence of risk behavior

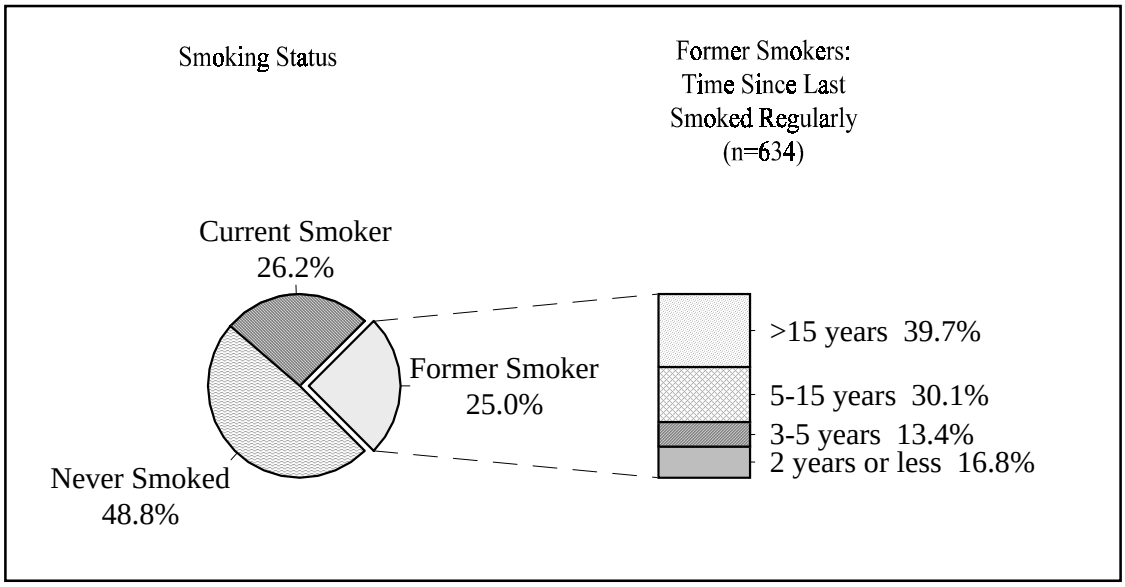
TABLE 8
Tobacco Use Indicators
Michigan Adults Who Currently Smoke Cigarettes, 1997
(percentages and means with 95% confidence interval limits)

Demographic Characteristics	1-19 Cigarettes Per Day (n = 689)	20-39 Cigarettes Per Day (n = 689)	40+ Cigarettes Per Day (n = 689)	Mean Number of Cigarettes Per Day (n = 689)
TOTAL	**53.4 ± 4.1**	**39.0 ± 3.9**	**7.6 ± 2.2**	**16.8 ± 0.9**
AGE				
18-34 Years	64.4 ± 6.3	33.2 ± 6.3	2.4 ± 2.0	13.8 ± 1.2
35-54 Years	48.4 ± 5.9	40.2 ± 5.7	11.5 ± 3.9	18.9 ± 1.3
55+Years	38.5 ± 10.2	50.9 ±10.4	10.5 ± 7.1	18.9 ± 2.5
GENDER				
Male	46.2 ± 5.9	43.0 ± 5.9	10.7 ± 3.7	18.9 ± 1.4
Female	61.6 ± 5.3	34.4 ± 5.3	4.0 ± 2.2	14.5 ± 1.0
RACE				
White	50.1 ± 4.5	41.9 ± 4.3	8.0 ± 2.4	17.5 ± 1.0
Black	77.0 ± 11.0	17.8 ± 9.8	5.2 ± 6.1[1]	12.1 ± 2.4
EDUCATION				
Less than High School	48.4 ± 10.4	42.3 ±10.2	9.2 ± 6.1	17.0 ± 2.2
High School Graduate	46.0 ± 6.3	47.2 ± 6.3	6.9 ± 3.3	17.5 ± 1.3
Some College	59.2 ± 7.3	32.3 ± 6.9	8.5 ± 4.1	16.9 ± 1.8
College Graduate	70.1 ± 10.2	24.2 ± 9.4	5.7 ± 5.7	14.1 ± 2.9
HOUSEHOLD INCOME				
<$10,000	55.7 ± 19.2	40.0 ±19.2	4.3 ± 5.9[2]	16.4 ± 3.7
$10,000-19,999	51.1 ± 10.6	38.9 ±10.4	10.1 ± 6.5	17.3 ± 2.1
$20,000-34,999	52.7 ± 7.6	41.6 ± 7.4	5.7 ± 3.7	15.8 ± 1.5
$35,000-50,000	53.2 ± 9.0	41.4 ± 8.8	5.3 ± 4.1	16.6 ± 1.9
>$50,000	54.3 ± 8.4	34.8 ± 7.8	10.9 ± 5.5	18.5 ± 2.3

[1]Confidence interval (95%) exceeds range of possible estimates (3/70).
[2] Confidence interval (95%) exceeds range of possible estimates (2/32).

FIGURE 3
Michigan Adults, 1997

Tobacco Use Indicators



Immunizations

Flu and pneumonia vaccinations are recommended for all persons aged 65 and older unless contraindicated. Thus, the prevalence estimates of having had these vaccinations are presented only for respondents in this age range. Among respondents aged 65 and older, 63.2 percent (±5.1) reported that they had had a flu shot in the past year, and 45.8 percent (±5.3) reported that they had ever had a pneumonia vaccination (Table 9). For both of these vaccinations, white respondents were more likely to report having had these vaccinations compared with African-American respondents.

The prevalence rates of having these vaccinations increased notably from 1993 estimates (Table 9a). Compared with other states, Michigan ranked in the third quartile for having flu vaccinations in the past year (Table 9b). This indicates a lower proportion of older adults receiving these vaccinations compared with older adults in other states. Michigan ranked at the median forever having pneumonia vaccinations for persons aged 65 and older.

TABLE 9
Immunization Indicators
Michigan Respondents Over 64 Years of Age, 1997
(in percentages with 95% confidence interval limits)

Demographic Characteristics	Had Flu Shot In Past Year [1] (n = 421)	Ever Had Pneumonia Vaccination [2] (n = 414)
TOTAL	**63.2 ± 5.1**	**45.8 ± 5.3**
GENDER		
Male	59.5 ± 8.7	41.7 ± 8.5
Female	65.7 ± 6.3	48.6 ± 6.5
RACE		
White	66.4 ± 5.3	48.7 ± 5.5
Black	38.6 ± 17.2	22.9 ± 19.1
EDUCATION		
Less than High School	58.2 ± 10.1	40.1 ± 9.9
High School Graduate	61.8 ± 8.0	48.8 ± 8.1
Some College or College Graduate	70.5 ± 8.7	47.2 ± 9.7
HOUSEHOLD INCOME		
<$10,000-19,999	57.1 ± 8.3	41.4 ± 8.1
$20,000-34,999	68.0 ± 8.9	55.3 ± 9.3
$35,000+	63.3 ± 14.3	40.8 ± 14.3

[1] Proportion of respondents 65 years or older who reported having had a flu shot during the previous 12 months.
[2] Proportion of respondents 65 years or older who reported ever having had a pneumonia vaccination.

TABLE 9a
COMPARISONS ACROSS SURVEY YEARS IN MICHIGAN
(in percentages with 95% confidence interval limits)

	Had Flu Vaccination in Past Year (Among 65+)	Ever Had Pneumonia Vaccination (Among 65+)
1993	48.7 ±5.3	25.4 ±4.4
1995	56.4 ±4.8	39.7 ±4.8
1997	63.2 ±5.1	45.8 ±5.3

No data collected in 1994 or 1996

TABLE 9b
COMPARISONS WITH ALL STATES THAT PARTICIPATED IN THE 1997 BRFS

	Had Flu Vaccination in Past Year (Among 65+)	Ever Had Pneumonia Vaccination (Among 65+)
Michigan's Prevalence	63.2% ±5.1	45.8% ±5.3
Median Prevalence in Participating States	65.9%	45.8%
Range of Prevalence in Participating States	41.5%-74.4%	32.2-59.4%
Michigan's Rank*	37th	27th

* Rank 1 = highest prevalence

Weight Status

The prevalence estimates for overweight presented in this report were based on body mass index (BMI) as calculated from the self-reported weight and height measurements (see appendix for further information on BMI). It was estimated that 34.5 percent of Michigan adults were overweight, 59.7 percent were at a healthy weight, and 5.8% were underweight (Table 10).

The prevalence of overweight was highest for respondents aged 55-64, was higher for African-Americans than for whites, and increased with decreasing education level.

Comparing across survey years in Michigan, there is a trend of an increasing proportion of adults who are overweight, increasing almost 12 percentage points since 1987 (Table 10a).

Michigan is almost nine percentage points away from achieving the *Healthy Michigan 2000* objective to reduce the proportion of Michigan's adult population who are overweight to 26 percent or less (Table 10b).

Compared with other states that participated in the 1997 BRFSS, Michigan ranked in the first quartile of overweight, indicating that a higher proportion of Michigan adults are overweight compared with adults in other states (Table 10c).

Respondents were also asked two questions about trying to exercise more and losing weight. Well over half of respondents (57.8% ±2.2) reported trying currently to exercise more or increase their physical activity. Forty-one percent (41.0% ±2.0) of all respondents reported that they were currently trying to lose weight.

TABLE 10
Weight Status [1]
Michigan Adults, 1997
(in percentages with 95% confidence interval limits)

Demographic Characteristics	Overweight (n = 2479)	Healthy Range (n = 2479)	Underweight (n = 2479)
TOTAL	**34.5 ± 2.0**	**59.7 ± 2.2**	**5.8 ± 1.0**
AGE			
18-24 Years	20.8 ± 5.5	61.8 ± 6.7	17.4 ± 5.3
25-34 Years	25.6 ± 4.1	69.0 ± 4.3	5.3 ± 2.0
35-44 Years	36.9 ± 4.1	58.9 ± 4.3	4.2 ± 1.8
45-54 Years	39.8 ± 5.1	57.9 ± 5.1	2.3 ± 1.4
55-64 Years	50.6 ± 6.3	48.2 ± 6.3	1.3 ± 1.2
65-74 Years	39.9 ± 6.9	54.4 ± 7.1	5.7 ± 3.3
75+ Years	31.1 ± 7.3	62.0 ± 7.4	6.9 ± 3.7
GENDER			
Male	35.6 ± 3.1	60.1 ± 3.1	4.2 ± 1.4
Female	33.5 ± 2.7	59.3 ± 2.7	7.2 ± 1.6
RACE			
White	32.9 ± 2.2	60.9 ± 2.4	6.2 ± 1.2
Black	45.6 ± 6.5	51.8 ± 6.5	2.5 ± 2.0
EDUCATION			
Less than High School	44.1 ± 6.3	50.0 ± 6.5	5.9 ± 2.9
High School Graduate	36.1 ± 3.5	57.9 ± 3.7	6.0 ± 1.8
Some College	33.1 ± 3.7	59.7 ± 3.7	7.1 ± 2.2
College Graduate	28.9 ± 3.9	67.4 ± 4.1	3.7 ± 1.6
HOUSEHOLD INCOME			
<$10,000	35.8 ±10.2	53.0 ±11.2	11.2 ± 7.6
$10,000-19,999	37.7 ± 5.9	56.4 ± 5.9	5.9 ± 2.7
$20,000-34,999	35.9 ± 3.9	58.5 ± 4.1	5.6 ± 1.8
$35,000-50,000	32.4 ± 4.7	63.0 ± 4.9	4.6 ± 2.4
>$50,000	33.5 ± 3.7	62.6 ± 3.9	3.9 ± 1.6

[1] Weight status categories were defined as follows: Overweight: (∃85th percentile) ∃27.8 BMI for males and ∃27.3 BMI for females; Healthy Weight: >20.7 to <27.8 BMI for males and >19.1 to <27.3 BMI for females; Underweight: (#15th percentile) #20.7 BMI for males and #19.1 BMI for females. Pregnant women were excluded from this analysis.

TABLE 10a
COMPARISONS ACROSS SURVEY YEARS
IN MICHIGAN
(in percentages with 95% confidence interval limits)

	Overweight
1987	22.7 ±1.9
1988	23.5 ±2.5
1989	26.2 ±2.1
1990	26.5 ±2.0
1991	29.4 ±2.1
1992	29.2 ±2.0
1993	29.1 ±2.0
1994	31.4 ±2.0
1995	31.0 ±1.4
1996	32.0 ±1.5
1997	34.5 ±2.0

TABLE 10b
COMPARISONS WITH HEALTH OBJECTIVES

Healthy Michigan 2000 Objective	1997 Michigan Prevalence
Reduce the proportion of Michigan's adult population who are overweight to 26% or less.	34.5% (±2.0) of Michigan adults are overweight.

TABLE 10c
COMPARISONS WITH ALL STATES
THAT PARTICIPATED IN THE 1997 BRFS

	Overweight
Michigan's Prevalence	34.5% ±2.0
Median Prevalence in Participating States	31.1%
Range of Prevalence in Participating States	25.1-36.3%
Michigan's Rank*	4**

* Rank 1 = highest prevalence of risk behavior
** Tied for 4th with another state

Alcohol Consumption

Risk factor prevalence for three indicators of possible alcohol abuse (heavy drinking, binge drinking, and drinking and driving) are presented in this report. All of these indicators are based on self-reported behavior during the month before the interview. Heavy drinking was defined as consuming 60 or more alcoholic beverages on average in the past month, binge drinking was defined as having consumed five or more drinks on a single occasion at least once in the past month, and drinking and driving was defined as one or more occasions of driving a vehicle after having had "perhaps too much to drink."

In the 1997 Michigan BRFS, more than half of respondents (57.6%) reported that they had drunk at least one alcoholic beverage during the past month (Table 11). Those who reported abstaining from alcohol in the past month tended to be older respondents, females, African-Americans, respondents with less formal education, and respondents with lower household incomes.

About four percent (3.8%) of respondents reported that they had consumed 60 or more alcoholic beverages on average in the past month (heavy drinking) (Table 11). Males were significantly more likely to report heavy drinking, as were respondents under age 35.

About one in five (18.8%) respondents reported drinking five or more alcoholic beverages on at least one occasion in the past month (binge drinking) (Table 12). Age, gender, education, and household income were all related to binge drinking. Young people and males were much more likely to report binge drinking, compared to older respondents and females, respectively. The proportion of those who reported binge drinking increased with education level and household income.

Less than four percent (3.5%) of respondents reported that, in the past month, they had driven a car after having had too much to drink (Table 12). Males were notably more likely to report drinking and driving compared with females. The proportion of those who reported drinking and driving increased with education level.

The 1997 alcohol-related risk indicator estimates are unchanged since the early 1990s. (Table 12a).

There has been no progress in recent years toward the *Healthy Michigan 2000* objectives regarding the reduction of the percentage of adults who drink heavily and who binge drink (Table 12b).

Compared with other states that participated in the 1997 BRFSS, Michigan ranked in the first quartile for all three alcohol risk indicators (heavy drinking, binge drinking, and drinking and driving). This indicates that a higher proportion of Michigan adults engaged in these behaviors compared with adults in other states (Table 12c).

TABLE 11
Alcohol Use Indicators
Michigan Adults, 1997
(in percentages with 95% confidence interval limits)

Demographic Characteristics	Consumed Any in Past Month [1] (n = 2578)	Heavy Drinking [2] (n = 2539)
TOTAL	**57.6 ± 2.2**	**3.8 ± 0.8**
AGE		
18-24 Years	62.9 ± 6.5	7.3 ± 3.5
25-34 Years	71.3 ± 4.1	5.4 ± 2.4
35-44 Years	63.4 ± 4.1	3.2 ± 1.6
45-54 Years	59.1 ± 5.1	2.3 ± 1.6
55-64 Years	48.2 ± 6.1	3.2 ± 2.2
65+ Years	35.1 ± 4.9	1.8 ± 1.4
GENDER		
Male	68.2 ± 2.9	7.0 ± 1.8
Female	48.4 ± 2.7	0.9 ± 0.4
RACE		
White	58.9 ± 2.2	3.9 ± 1.0
Black	49.0 ± 6.3	2.7 ± 2.5
EDUCATION		
Less than High School	37.3 ± 6.1	2.8 ± 2.2
High School Graduate	54.1 ± 3.5	4.8 ± 1.8
Some College	60.7 ± 3.7	4.1 ± 1.6
College Graduate	69.8 ± 3.9	2.4 ± 1.4
HOUSEHOLD INCOME		
<$10,000	39.7 ±11.0	1.7 ± 2.4[3]
$10,000-19,999	44.9 ± 5.9	2.2 ± 1.6
$20,000-34,999	54.6 ± 4.1	4.0 ± 1.8
$35,000-50,000	61.7 ± 4.7	5.0 ± 2.2
>$50,000	70.0 ± 3.5	4.3 ± 1.8

[1] Proportion of respondents who reported having had at least one alcoholic drink in the past month.
[2] Heavy drinking was defined as sixty or more alcoholic beverages on average consumed in the past month.
[3] Confidence interval (95%) exceeds range of possible estimates (2/99).

TABLE 12
Alcohol Use Indicators
Michigan Adults, 1997
(in percentages with 95% confidence interval limits)

Demographic Characteristics	Binge Drinking [1] (n = 2561)	Drinking and Driving [2] (n = 2560)
TOTAL	**18.8 ± 1.8**	**3.5 ± 0.8**
AGE		
18-24 Years	34.3 ± 6.3	4.7 ± 2.9
25-34 Years	32.0 ± 4.3	7.6 ± 2.5
35-44 Years	18.2 ± 3.3	3.0 ± 1.4
45-54 Years	14.9 ± 3.7	1.8 ± 1.4
55-64 Years	8.5 ± 3.5	1.2 ± 1.4[4]
65-74 Years	4.3 ± 2.9	1.1 ± 1.6[5]
75+ Years	2.3 ± 2.4[3]	2.7 ± 2.7
GENDER		
Male	29.2 ± 2.9	5.8 ± 1.6
Female	9.6 ± 1.6	1.5 ± 0.6
RACE		
White	19.8 ± 1.8	3.8 ± 1.0
Black	18.6 ± 7.8	2.2 ± 2.0
EDUCATION		
Less than High School	15.2 ± 4.5	1.6 ± 1.4
High School Graduate	18.0 ± 2.7	2.6 ± 1.2
Some College	19.8 ± 3.1	4.7 ± 1.8
College Graduate	21.1 ± 3.5	4.4 ± 1.8
HOUSEHOLD INCOME		
<$10,000	11.6 ± 6.7	1.6 ± 3.1[6]
$10,000-19,999	16.2 ± 4.3	1.1 ± 1.2[7]
$20,000-34,999	19.4 ± 3.3	3.6 ± 1.6
$35,000-50,000	19.0 ± 3.9	4.7 ± 2.2
>$50,000	23.1 ± 3.3	5.1 ± 1.8

[1] Proportion of respondents who reported that they had had five or more alcoholic beverages per occasion at least once in the past month.
[2] Proportion of respondents who said they had driven a car after having had perhaps too much to drink.
[3] Confidence interval (95%) exceeds range of possible estimates (4/192).
[4] Confidence interval (95%) exceeds range of possible estimates (3/295).
[5] Confidence interval (95%) exceeds range of possible estimates (2/224).
[6] Confidence interval (95%) exceeds range of possible estimates (1/99).
[7] Confidence interval (95%) exceeds range of possible estimates (4/346).

TABLE 12a
COMPARISONS ACROSS SURVEY YEARS IN MICHIGAN
(in percentages with 95% confidence interval limits)

	Heavy Drinking	Binge Drinking	Drinking and Driving
1987	- -	22.5 ±1.9	7.2 ±1.2
1988	- -	24.3 ±2.5	5.4 ±1.3
1989	4.7 ±1.0	19.5 ±2.0	4.6 ±1.0
1990	4.5 ±1.0	17.9 ±1.8	3.3 ±0.8
1991	4.9 ±1.1	18.3 ±1.9	4.2 ±0.9
1992	4.7 ±1.0	18.6 ±1.8	3.8 ±0.8
1993	3.8 ±0.9	18.6 ±1.7	4.6 ±1.0
1995	2.8 ±0.5	17.1 ±1.2	3.3 ±0.5
1996	4.6 ±1.0	19.0 ±1.7	4.8 ±0.9
1997	3.8 ±0.8	18.8 ±1.8	3.5 ±0.8

No data collected in 1994

TABLE 12b
COMPARISONS WITH HEALTH OBJECTIVES

Healthy Michigan 2000 Objective	1997 Michigan Prevalence
Reduce the percentage of adults who consume more than two drinks of alcohol per day on average.	3.8% (±0.8) of adults consumed an average of 60 drinks in the past month.
Reduce the prevalence of binge drinking among adults and youth.	18.8% (±1.8) of adults consumed five or more drinks on at least one occasion in the past month.

TABLE 12c
COMPARISONS WITH ALL STATES
THAT PARTICIPATED IN THE 1997 BRFS

	Heavy Drinking	Binge Drinking	Drinking and Driving
Michigan's Prevalence	3.8% ± 0.8	18.8% ± 1.8	3.5% ± 0.8
Median Prevalence in Participating States	3.0%	14.5%	1.9%
Range of Prevalence in Participating States	1.2-5.1%	6.3-23.3%	0.6-5.3%
Michigan's Rank*	10**	4	8

* Rank 1 = highest prevalence
** Of 51 participating states

Injury Prevention

Safety Belt Use

More than one-quarter (28.0%) of Michigan adults were at risk of injury due to not always wearing their car safety belts (Table 13). Seventy-two (72.0%) percent of Michigan adults were estimated to always wear their safety belts when they drove or rode in a car, 14.9 percent (±1.6) were estimated to nearly always wear their safety belts and 13.1 percent (±1.4) were estimated to wear their safety belts sometimes, seldom or never.

The proportion who did not always wear their safety belts decreased with increasing age and with increasing education level. Males were more likely to not always wear safety belts than females. African-Americans were more likely than whites to not always wear car safety belts. It appeared that safety belt non-use peaked for respondents with middle range household incomes; respondents with household incomes in the $20,000-34,999 range were more likely to not always wear their safety belts, compared with respondents with lower household incomes (not statistically different) and with higher household incomes (statistically significant).

Among respondents who had children living in their household, 16.0 percent reported that the oldest child in their household under age 16 did not always use a safety belt or a car safety seat while riding in the car (Table 13). African-Americans were more likely to report that the oldest child in their household did not always use a safety belt or a car safety seat, compared with whites.

The lack of car safety belt use has decreased sharply since 1989 in Michigan (Table 13a), dropping 10.2 percentage points.

The *Healthy Michigan 2000* objective for at least 70 percent of adults to always wear their safety belts has been met and exceeded (Table 13b), as measured by the BRFS.

Bicycle Helmet Use

Additional questions regarding unintentional injury were included in the 1997 Michigan BRFS. One regarded the use of bicycle helmets by children (using respondents as proxy), and the other regarded the existence of smoke detectors in the home.

About eight in 10 households with children between the ages of 5-15 who rode bicycles (79.1%) reported that the oldest child in the household did not always wear their bicycle helmet (Table 14). African-American respondents were more likely to report that the oldest child in the household between the ages of 5-15 did not always wear a helmet while riding a bicycle, compared to whites.

Proportion of Respondents Reporting Bicycle Helmet Use by Oldest Child (Ages 5-15) in the Households.

Bicycle Helmet Use	Percent	CI
Always	20.9	±3.1
Nearly Always	12.2	±2.5
Sometimes	11.4	±2.5
Seldom	6.4	±1.8
Never	49.1	±3.9

Smoke Detector Use

Two percent (2.2% ±0.6) of respondents were estimated to not have a smoke detector in their home.[a] Among respondents who had a smoke detector in the home, 73.9 percent (±2.0) were estimated to have deliberately tested all of the smoke detectors in the home within the past six months.

TABLE 13
Car Safety Restraint Use Indicators
Michigan, 1997
(in percentages with 95% confidence interval limits)

Demographic Characteristics	Adults: Not Always Use Safety Belt [1] (n = 2576)	Oldest Child: Not Always Use Safety Belt or Car Seat [2] (n = 964)
TOTAL	**28.0 ± 2.0**	**16.0 ± 2.5**
AGE		
18-24 Years	38.4 ± 6.5	17.7 8.8
25-34 Years	32.8 ± 4.3	14.6 4.1
35-44 Years	26.5 ± 3.7	16.5 3.7
45-54 Years	26.6 ± 4.5	18.3 7.6
55-64 Years	24.6 ± 5.5	13.0 23.7
65-74 Years	20.0 ± 5.9	0.0 0.0
75+ Years	19.8 ± 6.5	0.0 0.0
GENDER		
Male	35.4 ± 3.1	13.3 3.7
Female	21.4 ± 2.2	18.1 3.3
RACE		
White	26.2 ± 2.0	14.9 2.7
Black	38.9 ± 6.3	23.7 7.6
EDUCATION		
Less than High School	36.0 ± 6.1	22.0 9.0
High School Graduate	27.9 ± 3.3	14.5 4.1
Some College	30.7 ± 3.5	17.5 4.7
College Graduate	20.0 ± 3.3	13.9 4.5
HOUSEHOLD INCOME		
<$10,000	23.3 ± 9.2	9.8 ±13.3
$10,000-19,999	28.0 ± 5.3	17.7 ± 8.6
$20,000-34,999	32.3 ± 3.9	19.5 ± 5.5
$35,000-50,000	27.7 ± 4.3	19.2 ± 5.9
>$50,000	25.5 ± 3.5	12.6 ± 3.7

[1] Proportion of respondents who reported not always wearing their safety belt when driving or riding in a car.
[2] Proportion of respondents who reported that the oldest children in their household either: (1) did not always sit in a car seat if the oldest child was under the age of 5 or (2) did not always use a seatbelt when riding in a car if the oldest child was between the age of 5 to 15.

[a] Responses to "When was the last time you or someone else deliberately tested all of the smoke detectors in your home, either by pressing the test buttons or holding a source of smoke near them?" The response categories which were read only if necessary included time ranges, never, and no smoke detectors in home.

TABLE 13a
COMPARISONS ACROSS SURVEY YEARS IN MICHIGAN
(in percentages with 95% confidence interval limits)

	Adult Safety Belt Non-use (Not Always)
1989	38.2 ±2.4
1990	39.0 ±2.2
1991	34.0 ±2.1
1992	33.9 ±2.2
1993	35.8 ±2.2
1995	28.9 ±1.4
1996	26.9 ±2.0
1997	28.0 ±2.0

No data collected in 1994

TABLE 13b
COMPARISONS WITH HEALTH OBJECTIVES

Healthy Michigan 2000 Objective	1997 Michigan Prevalence
Increase use of safety belts to at least 70% of adult front seat motor vehicle occupants.	72.0% (±2.0) of adults always use their safety belts.

TABLE 14
Bicycle Helmet Use Indicator [1]
For Children in Household Ages 5 to 15
Michigan, 1997
(in percentages with 95% confidence interval limits)

Demographic Characteristics	Oldest Child Not Always Wears a Bicycle Helmet (n = 714)
TOTAL	**79.1 ± 3.1**
RACE OF RESPONDENT	
White	77.6 ± 3.5
Black	88.4 ± 6.7
EDUCATION OF RESPONDENT	
Less than High School	89.1 ± 8.8
High School Graduate	83.2 ± 5.1
Some College	83.1 ± 4.9
College Graduate	63.7 ± 7.6
HOUSEHOLD INCOME	
<$10,000	72.5 ± 24.5
$10,000-19,999	84.4 ± 10.8
$20,000-34,999	80.6 ± 6.1
$35,000-50,000	81.9 ± 6.3
>$50,000	75.6 ± 5.5

[1] Proportion of respondents who reported that the oldest child in household between the ages of 5 to 15 did not always wear a bicycle helmet when riding a bicycle.

Breast and Cervical Cancer Screening

In the 1997 Michigan BRFS, 90.9 percent of female respondents aged 20 and over reported ever having had a clinical breast exam for any reason, with three-quarters (75.3%) having had their last screening clinical breast exam (CBE) within the time frame recommended by the American Cancer Society (See Table 15 for definitions of time frames).

Ever having had a CBE and having a CBE screening at an appropriate interval were directly related to both education and household income levels, with the proportion of women having CBEs and having appropriate CBE screening increasing with increasing education and household income levels (except for a slight drop-off in appropriately-timed CBE for women with household incomes over $50,000). The prevalence of ever having had a CBE peaked for women aged 40-49, but was lower for younger and older women.

Ninety-four percent (94.4% ±1.4) of women who had received a clinical breast exam reported that their last CBE was done as part of a routine checkup, 4.3 percent (±1.2) said it was done due to a breast problem, and 1.3 percent (±0.6) said that their last CBE was done due to previous breast cancer.

Eighty-nine percent (88.6%) of female respondents aged 40 and over reported ever having had a mammogram for any reason (Table 16). Only fifty-nine percent (59.2%), however, had had their last screening mammography done within an appropriate time frame (i.e., within one year).

The prevalence of appropriately-timed screening mammography was greatest for those aged 50-64, but was lower for younger and older women. The prevalence of ever having had a mammogram increased with increasing levels of education.

More than half (52.4%) of women 40 years of age and older reported having had both CBE screening and mammography screening within the past year, i.e., within the appropriate time frame for both (Table 16). Age was related to this breast screening indicator, with women aged 50-64 more likely to have had appropriate breast screening compared with younger and older women. Although not statistically significant, lower proportions of women with less education reported having had appropriate breast screening compared with women with more education. In review, appropriate breast screening is a combination of appropriately-timed CBE and appropriately-timed mammography for women over age 39. Of women 40 years of age and older, 68.8 percent (±3.5) had appropriately-timed CBE, and, as shown on Table 16, 59.2 percent had appropriately-timed mammography screening.

Of women aged 40 and older who had appropriately-timed mammography, however, only 90.9 percent (±3.0) reported also having appropriately-timed CBE (within the past year). It would seem that women getting mammography screening are not all getting CBE screening. One possible implication is that accurate reporting is a problem, since both these components should go together. Another possibility is that women receiving mammography need further encouragement to get CBEs.

The definitions provided here are relatively new guidelines published by the American Cancer Society. In past guidelines, it was recommended that women over age 39 have CBEs done annually, and that mammograms be done annually for women over age 49, and every two years for women aged 40-49. It was estimated that in 1997, 55.4 percent (±3.7) of women over age 39 in Michigan had both tests within these (previous) guidelines.

The majority of women (86.8% ±2.4) who had ever had a mammogram reported that their last mammogram was done as part of a routine checkup, 11.2 percent (±2.2) percent said it was done for a breast

problem, and 2.0 percent (±1.0) said the last mammogram was conducted because of previous breast cancer.

There has been no clear trend since 1991 in the prevalence of ever having had a CBE for women over age 19 in Michigan (Table 16a). Although the prevalence of appropriate screening CBE increased between 1994 and 1997, there is no clear trend for this screening over the whole period (1991-97).

The proportion of women over age 39 that ever had a mammogram has increased 14.3 percentage points since 1989 in Michigan (Table 16b). Using the older recommendation guidelines, the prevalence of appropriately-timed mammography screening has increased 8.3 percentage points from 1989 to 1997, and appropriately-timed breast screening has increased 5.9 percentage points. The prevalence of appropriately-timed mammography screening and appropriately-timed breast screening under the newer guidelines are not as high as under the older guidelines (Table 16b).

Considering the changes over time (under the older recommendations), progress is being made toward the *Healthy Michigan 2000* objective of increasing the percentage of Michigan women who receive breast cancer screening at the recommended ages and frequencies (Table 16b and Table 16c).

Compared with other participating states, Michigan ranked near the median of adult women ever having had a CBE (Table 16d). Michigan did better in the proportion of women over age 39 ever having had a mammogram, ranking fourth among participating states.

Ninety-five percent (94.8%) of women in Michigan were estimated to have ever had a Pap test, which is a method of screening for cancer of the uterine cervix (Table 17). Women with lower household incomes were less likely to report having ever had a Pap test compared with other women.

An estimated 83.8 percent of women over 17 years of age had a screening Pap test within the previous three years [b] (Table 17). The proportion that had appropriately-timed testing was lowest among those over age 64, and was lower among those with less education and among those with lower household incomes. The majority of women (94.3% ±1.2) who had ever had a Pap test reported that their last test was done as part of a routine checkup.

There appears to be no change in the prevalence rates for having ever had a Pap test and having had appropriately-timed screening Pap tests across survey years in Michigan (Table 17a).

The figures in Table 17a provide no evidence of progress toward meeting the *Healthy Michigan 2000* objective regarding increasing the percentage of women receiving cervical cancer screenings at appropriate frequencies (Table 17b).

Compared with other states participating in the 1997 BRFSS, Michigan ranked near the median of ever having had a Pap test (Table 17c).

[b] It is currently recommended that women receive this screening Pap test every one to three years, with the exact frequency of testing left up to the recommendations of individual physicians.

TABLE 15
Clinical Breast Exam Indicators
Female Adults Over 19 Years of Age
Michigan, 1997
(in percentages with 95% confidence interval limits)

Demographic Characteristics	Ever Had Clinical Breast Exam (n = 1433)	Had Appropriately-timed Screening Clinical Breast Exam[1] (n = 1346)
TOTAL	**90.9 ± 1.6**	**75.3 ± 2.5**
AGE		
20-29 Years	84.6 ± 5.3	79.5 ± 5.9
30-39 Years	94.7 ± 2.7	88.8 ± 3.7
40-49 Years	96.9 ± 2.0	69.2 ± 5.7
50-64 Years	94.9 ± 2.9	75.4 ± 5.7
65+ Years	82.3 ± 4.9	62.4 ± 6.5
RACE		
White	91.8 ± 1.8	76.2 ± 2.7
Black	87.5 ± 5.3	72.5 ± 7.1
EDUCATION		
Less than High School	81.8 ± 6.5	61.3 ± 8.8
High School Graduate	90.2 ± 2.7	72.4 ± 4.3
Some College	91.7 ± 3.1	76.7 ± 4.5
College Graduate	95.0 ± 2.7	83.4 ± 4.5
HOUSEHOLD INCOME		
<$10,000	77.6 ±12.0	59.9 ±13.9
$10,000-19,999	87.1 ± 4.9	68.2 ± 6.9
$20,000-34,999	90.5 ± 2.9	77.1 ± 4.5
$35,000-50,000	97.4 ± 2.2	85.3 ± 4.9
>$50,000	95.1 ± 2.5	78.0 ± 4.9

[1] Proportion of female respondents 20 years of age and older whose last clinical breast exam was within the previous three years for women 20-39 years and within the previous year for women 40 years of age and older. Respondents whose last clinical breast exam was done because of breast cancer or other breast problems were not included in this analysis.

FIGURE 4
Michigan, 1997

Cancer Screening Indicators for Women

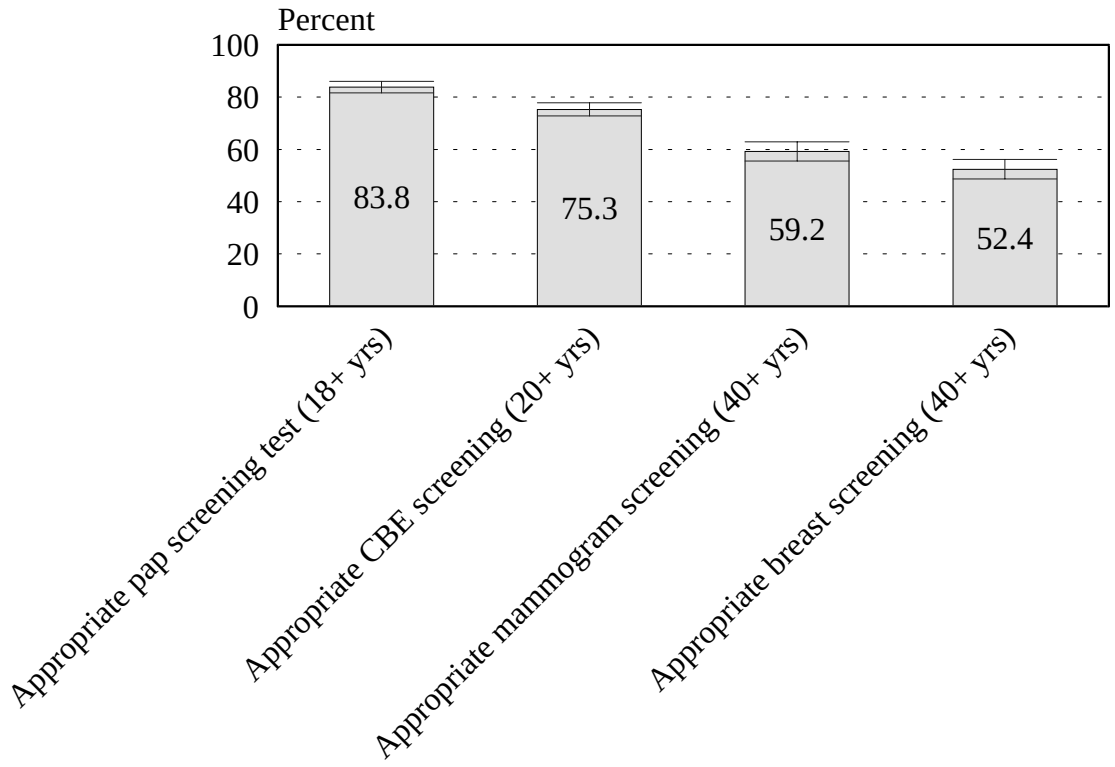


TABLE 16
Mammography Indicators
Female Adults Over 39 Years of Age
Michigan, 1997
(in percentages with 95% confidence interval limits)

Demographic Characteristics	Ever Had Mammogram (n = 862)	Mammography Screening in Past Year[1] (n = 777)	Both Clinical Breast Exam and Mammograpy Screening in Past Year[2] (n = 777)
TOTAL	**88.6 ± 2.4**	**59.2 ± 3.7**	**52.4 ± 3.7**
AGE			
40-49 Years	86.4 ± 4.1	52.7 ± 6.3	49.6 ± 6.3
50-64 Years	91.2 ± 3.5	68.1 ± 6.3	61.5 ± 6.7
65+ Years	88.8 ± 4.1	58.4 ± 6.7	47.1 ± 6.9
RACE			
White	89.8 ± 2.4	58.9 ± 4.1	52.3 ± 4.1
Black	81.0 ± 8.8	61.2 ± 10.6	52.7 ± 11.0
EDUCATION			
Less than High School	84.5 ± 7.1	55.2 ± 10.6	44.3 ± 10.6
High School Graduate	87.0 ± 3.9	58.9 ± 6.1	51.6 ± 6.3
Some College	88.8 ± 4.5	60.7 ± 7.3	54.3 ± 7.4
College Graduate	93.9 ± 3.3	60.0 ± 7.8	55.8 ± 7.8
HOUSEHOLD INCOME			
<$10,000	85.0 ± 10.0	48.6 ± 16.3	42.0 ± 16.1
$10,000-19,999	85.8 ± 6.5	54.1 ± 9.2	43.9 ± 9.2
$20,000-34,999	87.2 ± 4.7	64.8 ± 7.1	58.1 ± 7.3
$35,000-50,000	91.6 ± 5.3	56.5 ± 10.8	52.0 ± 11.0
>$50,000	90.8 ± 3.9	59.0 ± 7.4	55.4 ± 7.4

[1] Proportion of female respondents 40 years and older who reported having had a routine mammogram within the past year. Respondents whose last mammogram was done because of breast cancer or other breast problems were not included in this analysis.
[2] Proportion of female respondents aged 40 and older who had both a clinical breast exam and a mammography screening within the previous year.

TABLE 16a

COMPARISONS ACROSS SURVEY YEARS IN MICHIGAN

(in percentages with 95% confidence interval limits)

	Ever Had Clinical Breast Exam (women 20+ yrs)	Appropriate Screening Clinical Breast Exam (women 20+ yrs)
1991	92.5 ±1.7	74.2 ±2.7
1992	88.8 ±1.9	72.8 ±2.8
1993	89.5 ±1.8	71.9 ±2.7
1994	90.1 ±1.7	70.8 ±2.6
1995	90.4 ±1.2	74.0 ±1.8
1996	91.1 ±1.2	74.2 ±1.8
1997	90.9 ±1.6	75.3 ±2.5

TABLE 16b

COMPARISONS ACROSS SURVEY YEARS IN MICHIGAN

(in percentages with 95% confidence interval limits)

	Ever Had Mammogram (women 40+ yrs)	Appropriate Mammography Screening* (women 40+ yrs)	Appropriate Breast Screening * (women 40+ yrs)
1989	74.3 ±3.5	57.9 ±4.3	- -
1990	74.2 ±3.4	55.8 ±4.2	- -
1991	75.6 ±3.4	55.9 ±4.0	49.5 ±4.2
1992	82.4 ±2.8	59.9 ±4.0	50.2 ±4.1
1993	83.0 ±3.0	58.4 ±3.9	48.8 ±4.1
1994	86.5 ±2.6	58.5 ±3.8	47.0 ±3.8
1995	88.0 ±1.6	66.3 ±2.5	53.9 ±2.7
1996	88.6 ±1.7	65.2 ±2.6	52.9 ±2.7
Old Guidelines* 1997	- -	66.2 ±3.5	55.4 ±3.7
New Guidelines* 1997	88.6 ±2.4	59.2 ±3.7	52.4 ±3.7

* The recommended time frame for appropriate mammography screening changed in 1997 to annually for all women over 39 years of age. For all previous years, the recommendation was biannual screening for women aged 40 to 49 and annual screening for women aged 50+. As appropriate breast screening is a combination of appropriate CBE and appropriate mammography, this indicator changed as well.

TABLE 16c
COMPARISONS WITH HEALTH OBJECTIVES

Healthy Michigan 2000 Objective	1997 Michigan Prevalence
Increase the percentage of Michigan women who receive breast cancer screening at the recommended ages and frequencies.	75.3% (±2.5) of women age 20 and older have had appropriately-timed screening clinical breast exams. 59.2% (±3.7) of women age 40 and older have had mammography in the past year. * 52.4% (±3.7) of women age 40 and older have had both a clinical breast exam and a mammography in the past year. *

* These estimates are based on the new ASC recommendations.

TABLE 16d
COMPARISONS WITH ALL STATES
THAT PARTICIPATED IN THE 1997 BRFS

	Ever Had CBE (women 18+ yrs)	Ever Had Mammogram (women 40+ yrs)
Michigan's Prevalence	89.3% ±2.0	88.6% ±2.4
Median Prevalence in Participating States	90.6%	84.4%
Range of Prevalence in Participating States	80.2-94.8%	74.4-89.3%
Michigan's Rank*	32	4**

*Rank 1 = highest prevalence of healthful behavior
**51 participating states

TABLE 17
Pap Test Screening Indicators
Female Respondents Over 17 Years of Age
Michigan, 1997
(in percentages with 95% confidence interval limits)

Demographic Characteristics	Ever Had Pap Test (n = 1482)	Appropriately-timed Pap Screening Test[1] (n = 1374)
TOTAL	**94.8 ± 1.4**	**83.8 ± 2.2**
AGE		
18-29 Years	86.5 ± 4.7	83.8 ± 5.3
30-39 Years	98.0 ± 2.0	89.2 ± 3.9
40-49 Years	99.4 ± 0.8[2]	88.5 ± 3.9
50-64 Years	96.8 ± 2.5	87.1 ± 4.5
65+ Years	93.2 ± 3.1	69.0 ± 6.1
RACE		
White	95.1 ± 1.4	83.5 ± 2.4
Black	94.1 ± 4.1	87.5 ± 5.5
EDUCATION		
Less than High School	92.3 ± 4.3	71.4 ± 8.0
High School Graduate	95.3 ± 2.2	83.7 ± 3.5
Some College	94.6 ± 2.7	83.9 ± 3.9
College Graduate	96.0 ± 2.5	89.8 ± 3.5
HOUSEHOLD INCOME		
<$10,000	82.9 ± 10.8	59.0 ± 14.1
$10,000-19,999	93.8 ± 3.7	77.0 ± 6.5
$20,000-34,999	95.5 ± 2.2	83.0 ± 4.1
$35,000-50,000	96.0 ± 3.3	89.7 ± 4.5
>$50,000	97.4 ± 2.0	89.4 ± 3.5

[1] Proportion of all female respondents aged 18 and older who had a Pap test within the previous three years. Respondents whose last Pap test was done because of a problem were not included in this analysis.
[2] Confidence interval (95%) exceeds range of possible estimates (317/319).

TABLE 17a
COMPARISONS ACROSS SURVEY YEARS IN MICHIGAN
(in percentages with 95% confidence interval limits)

	Ever Had Pap Test	Had Appropriately-timed Screening Pap Test
1991	94.8 ±1.4	
1992	94.2 ±1.6	83.0 ±2.6
1993	94.5 ±1.4	82.5 ±2.3
1994	94.7 ±1.4	81.2 ±2.4
1995	94.7 ±1.3	82.2 ±2.2
1996	96.0 ±1.2	84.1 ±2.2
1997	94.8 ±1.4	83.8 ±2.2

TABLE 17b
COMPARISONS WITH HEALTH OBJECTIVES

Healthy Michigan 2000 Objective	1997 Michigan Prevalence
Increase the percentage of Michigan women who receive cervical cancer screening at the recommended ages and frequencies.	83.8% (±2.2) of women over age 17 have had a screening Pap test within the past 3 years.

TABLE 17c
COMPARISONS WITH ALL STATES
THAT PARTICIPATED IN THE 1997 BRFS

	Ever Had a Pap Test
Michigan's Prevalence	94.8% ±1.4
Median Prevalence in Participating States	94.7%
Range of Prevalence in Participating States	84.5-96.8%
Michigan's Rank*	26**

* Rank 1 = highest prevalence of healthful behavior
** Tied for 26th with another state
**51 participating states

Colorectal Cancer Screening

Respondents over age 49 were asked a series of questions related to colorectal cancer screening. More than 40% (42.9%) of respondents aged 50 and older had ever taken a blood stool test using a home kit, but only 22.1 percent had had this test within the past year (Table 18).

Respondents over age 59 were more likely to have ever taken the blood stool test than were younger respondents. Females were more likely than men to have ever taken the blood stool test. Although not statistically significant, whites appeared more likely to have ever taken the blood stool test compared to African-Americans, as were college graduates more likely than other respondents. College graduates were more likely, and respondents in the lowest household income category were less likely, to have had the blood stool test within the past year.

Nearly half of respondents aged 50 and older had ever had a sigmoidoscopy or proctoscopy examination, but only 35 percent had had a sigmoidoscopy or proctoscopy exam within the past five years (Table 18). Age was related to ever having had a sigmoidoscopy or proctoscopy examination, as well as having had a sigmoidoscopy or proctoscopy exam within the past five years. Older respondents were more likely to report these screenings compared to younger respondents.

TABLE 18
Colorectal Cancer Indicators
Respondents Over 49 Years of Age
Michigan Adults, 1997
(in percentages with 95% confidence interval limits)

Demographic Characteristics	Ever Had Blood Stool Test[1] (n = 877)	Had Blood Stool Test in Past Year[2] (n = 870)	Ever Had Sigmoidoscopy/ Proctoscopy[3] (n = 876)	Had Sigmoidscopy/ Proctoscopy Test in Past Five Years[4] (n = 870)
TOTAL	**42.9 ± 3.5**	**22.1 ± 2.9**	**47.6 ± 3.5**	**35.0 ± 3.5**
AGE				
50-59 Years	36.0 ± 5.5	21.2 ± 4.9	36.8 ± 5.7	26.4 ± 5.1
60-69 Years	46.6 ± 6.7	24.0 ± 5.9	52.7 ± 6.9	38.8 ± 6.7
70+ Years	46.9 ± 6.1	21.3 ± 5.1	54.6 ± 6.1	40.7 ± 6.1
GENDER				
Male	34.6 ± 5.3	19.3 ± 4.5	46.3 ± 5.7	37.5 ± 5.5
Female	49.7 ± 4.7	24.4 ± 4.1	48.7 ± 4.7	32.9 ± 4.3
RACE				
White	44.4 ± 3.7	22.8 ± 3.1	48.4 ± 3.7	35.5 ± 3.7
Black	30.7 ± 11.2	16.1 ± 9.0	39.5 ± 12.0	31.9 ± 11.6
EDUCATION				
Less than High School	39.3 ± 8.4	19.3 ± 6.9	53.2 ± 8.6	38.1 ± 8.6
High School Graduate	42.8 ± 5.7	21.7 ± 4.7	44.5 ± 5.7	34.7 ± 5.5
Some College	40.8 ± 7.3	16.6 ± 5.5	48.7 ± 7.3	37.0 ± 7.1
College Graduate	50.2 ± 8.2	33.2 ± 7.8	47.0 ± 8.2	29.3 ± 7.4
HOUSEHOLD INCOME				
<$10,000	29.6 ± 12.5	9.3 ± 7.4	45.8 ± 14.9	32.5 ± 13.7
$10,000-19,999	38.1 ± 7.8	19.4 ± 6.7	46.0 ± 8.0	33.9 ± 7.8
$20,000-34,999	47.3 ± 6.7	25.8 ± 5.9	48.2 ± 6.7	37.6 ± 6.5
$35,000-50,000	44.1 ± 10.0	19.7 ± 8.2	41.5 ± 10.0	32.9 ± 9.4
>$50,000	40.3 ± 7.6	24.8 ± 6.7	48.6 ± 7.8	35.1 ± 7.6

[1] Proportion of respondents aged 50 or older who reported ever having had a blood stool test using a home kit.
[2] Proportion of respondents aged 50 or older who reported having taken a blood stool test using a home kit within the past year.
[3] Proportion of respondents aged 50 or older who reported ever having had a sigmoidoscopy or proctoscopy exam.
[4] Proportion of respondents aged 50 or older who reported having had a sigmoidscopy or proctoscopy examination within the past five years.

HIV/AIDS

Only respondents under age 65 were asked HIV/AIDS questions. Several questions were posed regarding attitudes toward education and the use of condoms in prevention of HIV infection. Respondents were asked if they had a child in school at what grade they thought the child should begin receiving education in school about HIV infection and AIDS. Only 1.5 percent (±0.6) of respondents age 18-64 said that children should never receive this type of education in school. Of respondents under age 65 who thought that children should receive AIDS/HIV infection education in school, the mean grade at which they thought children should begin receiving this information was fourth (4.6) grade (Table 19). Of adults who said this education should be provided, cumulatively 60.0 percent (±2.4) thought that children should receive education in school about AIDS/HIV infection by fifth grade, and 95.6 percent (±1.0) by eighth grade.

Over ninety percent (92.8%) of respondents under age 65 said that if they had a teenager who was sexually active they would encourage him or her to use a condom (Table 19). Younger respondents were more likely to affirm this compared with older respondents.

Eighty percent (80.1%) of respondents under age 65 said that if they had a teenager, they would encourage him or her to refrain from sexual activity (Table 19). Older respondents were more likely to affirm this compared to younger respondents. Females were more likely to report this attitude compared to males. Those with less than high school education were less likely to report this attitude compared to other respondents.

Other 1997 BRFS HIV questions were directed at the perceived risk of HIV infection and behavioral changes related to HIV infection. Nearly six percent (5.5%) of respondents under age 65 reported that they thought their chance of getting HIV was high or medium, and more than 40 percent (43.7%) said they had been tested for HIV (Table 20). The proportion that perceived a high to medium risk for HIV was higher for younger respondents. There was a noticeable (although not statistically significant) difference in the proportion of white (4.9%) and African-American respondents (8.9%) in the reported perception of being at high or medium risk for HIV. The proportion that perceived a high to medium risk for HIV was higher for respondents with less than high school education compared to other respondents. The proportion estimated to have ever been tested for HIV tended to be higher among younger people (although not a strictly linear relationship), and among African-Americans.

In comparing across recent survey years in Michigan, there has been no consistent change in the proportion of adults (18-64 years) who would encourage condom use for a sexually active teen (Table 20a). There has been a decrease since 1993 in the proportion of adults (18-64 years) who think that their chance of getting AIDS is high or medium, but the proportion who have ever been tested for HIV has notably increased compared with 1993.

Compared with other states that participated in the 1997 BRFSS, Michigan ranked in the first quartile in encouraging condom use for sexually active teens, indicating that a higher proportion of adults would encourage a sexually active teen to use condoms, relative to adults in other states (Table 20b).

Compared with other states that participated in the 1997 BRFSS, Michigan ranked in the third quartile in perceived chance of AIDS being high or medium. This indicates that a lower proportion of adults believe their chance of contracting the AIDS virus is high or medium, relative to adults in other states (Table 20c). Michigan ranked slightly above the median in ever being tested for AIDS, however, indicating that a higher proportion of adults have ever been tested for the AIDS virus compared with adults in other states.

TABLE 19
Indicators of Attitudes Toward Condom Use and Education
Respondents 18-64 Years of Age
Michigan, 1997
(percentages and means with 95% confidence interval limits)

Demographic Characteristics	Mean Grade for AIDS Education [1] (n = 2029)	Encourage Condom Use Among Sexually Active Teens [2] (n = 2116)	Encourage Refrain From Sexual Activity [3] (N = 2117)
TOTAL	**4.6 ± 0.2**	**92.8 ± 1.2**	**80.1 ± 2.0**
AGE			
18-24 Years	4.7 ± 0.4	96.7 ± 2.2	63.1 ± 6.5
25-34 Years	4.3 ± 0.2	94.0 ± 2.2	77.3 ± 3.9
35-44 Years	4.7 ± 0.2	92.6 ± 2.4	86.1 ± 2.9
45-54 Years	4.7 ± 0.2	93.9 ± 2.5	84.2 ± 3.7
55-64 Years	4.5 ± 0.4	85.1 ± 4.7	86.6 ± 4.1
GENDER			
Male	4.9 ± 0.2	91.6 ± 2.0	76.2 ± 2.9
Female	4.2 ± 0.2	93.9 ± 1.4	83.9 ± 2.4
RACE			
White	4.6 ± 0.2	92.8 ± 1.4	79.8 ± 2.2
Black	4.3 ± 0.4	95.5 ± 2.4	82.7 ± 5.3
EDUCATION			
Less than High School	4.5 ± 0.4	95.7 ± 2.9	70.9 ± 7.4
High School Graduate	4.7 ± 0.2	93.1 ± 2.2	80.0 ± 3.3
Some College	4.5 ± 0.2	94.2 ± 1.8	79.7 ± 3.5
College Graduate	4.5 ± 0.2	90.1 ± 2.7	84.0 ± 3.1
HOUSEHOLD INCOME			
<$10,000	5.2 ± 0.6	86.1 ± 9.4	74.8 ± 12.0
$10,000-19,999	4.4 ± 0.4	94.6 ± 3.9	68.6 ± 7.3
$20,000-34,999	4.6 ± 0.2	92.6 ± 2.4	77.9 ± 3.9
$35,000-50,000	4.8 ± 0.2	92.9 ± 2.7	82.1 ± 3.9
>$50,000	4.4 ± 0.2	94.2 ± 1.8	83.0 ± 3.1

[1] Of the respondents who indicated that children should receive HIV/AIDS education, the mean grade at which this education should be received.
[2] Proportion of respondents who reported that if they had a teenager who was sexually active they would encourage him or her to use a condom. "Don't know" and "Would give other advice" were considered valid responses [0.4% (±0.3) and 3.9% (±0.9) respectively].
[3] Proportion of respondents who reported that if they had a teenager, they would encourage him or her to refrain from sexual activity. "Don't know" and "Would not give advice" were considered valid responses [0.9% (±0.4) and 1.0% (±0.4) respectively].

TABLE 20
HIV/AIDS Screening Indicators
Respondents 18-64 Years of Age
Michigan, 1997
(in percentages with 95% confidence interval limits)

Demographic Characteristics	Chance of Getting AIDS High or Medium [1] (n = 2117)	Ever Tested for AIDS [2] (n = 2128)
TOTAL	**5.5 ± 1.0**	**43.7 ± 2.4**
AGE		
18-24 Years	7.1 ± 3.3	44.8 ± 6.7
25-34 Years	6.5 ± 2.4	60.1 ± 4.5
35-44 Years	5.2 ± 1.8	43.0 ± 4.1
45-54 Years	5.1 ± 2.4	34.3 ± 4.7
55-64 Years	2.8 ± 1.8	27.7 ± 5.7
GENDER		
Male	5.2 ± 1.6	43.2 ± 3.5
Female	5.7 ± 1.4	44.1 ± 2.9
RACE		
White	4.9 ± 1.0	40.6 ± 2.5
Black	8.9 ± 4.1	62.7 ± 6.7
EDUCATION		
Less than High School	12.2 ± 5.7	49.8 ± 8.2
High School Graduate	4.0 ± 1.6	36.6 ± 3.9
Some College	5.8 ± 1.8	45.5 ± 4.1
College Graduate	4.8 ± 1.8	48.2 ± 4.3
HOUSEHOLD INCOME		
<$10,000	10.5 ± 9.0	45.7 ± 13.7
$10,000-19,999	8.2 ± 4.5	53.7 ± 7.6
$20,000-34,999	6.1 ± 2.2	46.4 ± 4.5
$35,000-50,000	5.0 ± 2.2	39.7 ± 4.9
>$50,000	4.2 ± 1.6	43.8 ± 3.9

[1] Proportion of respondents who reported "high" or "medium" to the question "What are your chances of getting infected with HIV, the virus that causes AIDS?". "Don't know" was considered a valid response [0.4% (±0.2)].

[2] Proportion of respondents who said "yes" to the question "Have you ever had your blood tested for HIV?". "Don't know" was considered a valid response [2.5% (±0.7)].

TABLE 20a
COMPARISONS ACROSS SURVEY YEARS IN MICHIGAN
(in percentages with 95% confidence interval limits)

	Encourage Teen Condom Use	Chance of AIDS High or Medium	Ever Tested for HIV
1993	91.5 ±1.3	11.9 ±1.6	29.8 ±2.2
1994	89.8 ±1.5	7.5 ±1.3	39.2 ±2.5
1995	92.7 ±1.2	6.2 ±1.2	41.4 ±2.4
1996	88.4 ±1.5	6.3 ±1.2	42.5 ±2.3
1997	92.8 ±1.2	5.5 ±1.0	43.7 ±2.4

TABLE 20b
COMPARISONS WITH ALL STATES
THAT PARTICIPATED IN THE 1997 BRFS

	Encourage Condom Use Among Sexually Active Teens (18-64 yrs)
Michigan's Prevalence	92.8% ±1.2
Median Prevalence in Participating States	89.9%
Range of Prevalence in Participating States	78.5-96.0%
Michigan's Rank*	9**

* Rank 1 = highest prevalence
** Tied for 9th with another state
**51 participating states

TABLE 20c
COMPARISONS WITH ALL STATES
THAT PARTICIPATED IN THE 1997 BRFS

	Chance of AIDS High or Medium (18-64 yrs)	Ever Tested for AIDS (18-64 yrs)
Michigan's Prevalence	5.5% ±1.0	43.7% ±2.4
Median Prevalence in Participating States	6.1%	42.3%
Range of Prevalence in Participating States	3.3-12.1%	24.4-60.5%
Michigan's Rank*	37**	21**

* Rank 1 = highest prevalence
** 51 participating states

For those who had a test, the reasons for getting an HIV blood test were as follows.

Main Reason for Last HIV Test	Percent	CI
Just to know status	18.4	±2.7
Routine checkup	14.9	±2.5
Pregnancy	13.6	±2.4
Apply for marriage license	10.1	±2.2
Illness, surgery or hospitalization	10.1	±2.0
Blood donation	7.5	±2.0
Life or health insurance	6.2	±1.8
Referred or think at risk	3.8	±1.4
Employment	3.7	±1.4
Occupational exposure	3.5	±1.2
Military service	3.0	±1.4
Other reasons	5.2	±1.6

The locations of the most recent blood test for HIV were as follows.

Where Last HIV Test	Percent	CI
HMO doctor or private doctor	36.0	±3.5
Hospital, emergency room, outpatient	28.1	±3.1
Clinic of any kind (except health dept)	13.4	±2.5
Health Department	10.6	±2.2
Military	3.4	±1.4
At home by nurse or health worker	3.4	±1.4
Blood bank, Red Cross, plasma	1.1	±0.8
Other places	4.2	±1.6

It was estimated that the majority (85.7% ±2.5) of those tested for HIV received the results of the test, and that among those receiving their results, only 29.7 percent (±3.5) received counseling or talked with a health care professional about the results of the test.

An estimated 12.4 percent (±1.6) of Michigan adults under age 65 reported changing their sexual behavior in the past year due to what they knew of HIV. Among respondents who reported that they had changed their sexual behavior due to what they knew of HIV, 81.5 percent (±5.5) said they now had sexual intercourse with only one partner, 55.3 percent (±7.4) said they now always used condoms for protection, and 63.9 percent (±6.3) reported that they had decreased the number of partners or had become abstinent. In terms of having only one partner or decreasing the number of partners, it is difficult to establish whether these behavior changes represent meaningful changes in risk of HIV infection. These are open to interpretation.

Nutritional Habits and Perceptions

Respondents were asked a series of questions regarding their daily nutritional intake and perceptions about their food habits. (A more in-depth analysis of these results is reported in the special weight and diet chapter of this report). Eighteen percent (17.8% ±1.6) of respondents reported that there was little variety in the foods they ate from day to day, 51.2 percent (±2.1) reported some variety, and 31.0 percent (±2.0) of respondents indicated that there was a lot of variety in the foods that they ate on a regular basis. Almost one-quarter of respondents (24.2% ±1.8) reported eating fruits or vegetables five or more times per day.

Respondents were also asked questions regarding limiting intake of fat, cholesterol, and salt. Two-thirds of respondents (66.3% ±2.0) reported that they were trying to limit fat, 46.9 percent (±2.1) were trying to limit cholesterol, and 44.2 percent (±2.1) of respondents were currently trying to limit their salt intake.

APPENDIX: METHODS AND SAMPLE RESULTS

Survey Protocol

The Michigan Behavioral Risk Factor Surveys are conducted through a cooperative agreement with the Centers for Disease Control and Prevention and have followed the overall CDC survey protocol[2] for the Behavioral Risk Factor Surveillance System (BRFSS) since 1987.

In 1997, the Michigan BRFS data collection was conducted by the Institute for Public Policy and Social Research at Michigan State University for the Michigan Department of Community Health. Every month in 1997, a random sample of approximately 1,200 possible telephone numbers in Michigan was generated. Contact with a household, random selection of a respondent, and interviews were then attempted by telephone.

A disproportionate stratified random sample was used for the 1997 BRFS, with the stratification based on phone bank density. The higher density stratum included all possible phone numbers in 100-banks with at least two directory-listed numbers; the lower density stratum included those in 100-banks with one or fewer directory-listed numbers. The call design consisted of up to 15 calls to reach a household and up to a total of 20 calls to select and interview the eligible respondent. Calling was distributed across a combination of daytime hours during the week, weekday evenings, and weekends. Once a household was contacted, the intrahousehold selection procedure involved the enumeration of all household members 18 years and older and the random selection of one adult member as the eligible respondent. The monthly target sample size was 210 completed interviews, resulting in an annual sample size of approximately 2,500 per survey year.

The survey instrument consisted mainly of CDC BRFSS modules, including questions on health status; health care access; cardiovascular disease (risk and risk prevention counseling); diabetes; blood pressure; blood cholesterol; cigarette smoking; immunizations; body weight and height; alcohol consumption; injury prevention (car safety belts and bike helmets); breast, cervical, and colorectal cancer screening; HIV/AIDS; and nutritional habits and perceptions.

Weighting and Analysis

The 1997 BRFS data were initially weighted to adjust for the probabilities of selection (based on the probability of telephone number selection, on the number of adults in the household and number of residential phone lines). A poststratification weighting factor that conditionally adjusted for the 1995 Michigan intercensal population estimates by age, sex, and race was then applied after the initial weighting. Both the initial weighting factor and the poststratification weighting factor were trimmed at approximately the 3rd and 97th percentile of their distributions to minimize weighting loss.

Weighted proportions of respondents who reported risk behaviors are presented in this report by categories of age, sex, race, education, and income. The age, sex, race, and educational attainment refer to the respondent. Income, however, reflected the reported annual income of the household from all sources, regardless of the respondent's income and the number of individuals in the household. Sample sizes used to calculate the estimates included in this report varied and are reflected in the confidence intervals presented with each estimate. Unweighted sample sizes are shown in each table of main indicators.

Unless otherwise specified, respondents who answered that they did not know or refused to answer were not included in the calculation of percentages of the population considered "at risk."

Calculations of the prevalence estimates and confidence interval limits were performed using SUDAAN, a statistical computing program that was designed for analyzing data from multistage sample surveys.[3]

Sample Results

A total of 14,372 telephone numbers were used for the 1997 Michigan BRFS. The final call dispositions for the sample numbers fell into the following categories: 2,523 completed interviews, 1,564 refusals, 6,292 nonworking numbers, 762 ring-no-answers, 2,192 businesses, 105 households reached but no members eligible, 744 eligible respondents selected but not interviewed, 66 informants/eligible respondents with language barriers, 22 interviews terminated at some point, 6 busy numbers, and 96 informants/eligible respondents unable to participate. The CASRO (Council of American Survey Research Organizations) response rate,[4] which includes a portion of the dispositions with unknown eligibility in the denominator of the rate, was 49.2 percent. Fifty percent (50.3%) of all eligible household contacts resulted in a completed interview; 31.2 percent of all household contacts refused.

The distributions of the sample from the 1997 Michigan BRFS are presented in Tables A.1 (by age, gender and race) and A.2 (by education, household income, employment status among those aged 20-64 years, and marital status).

TABLE A.1
Comparison of the 1997 BRFS Sample Distribution
With 1995 Census Distributions for Michigan
(In Percentages)

Demographic Characteristics	Unweighted Sample	Weighted Sample [1]	1995 Population Estimates [2]
AGE			
18-24 Years	10.3	12.3	13.2
25-34 Years	20.3	20.0	20.6
35-44 Years	24.1	22.6	22.3
45-54 Years	16.8	16.4	16.3
55-64 Years	11.5	11.1	10.8
65-74 Years	8.8	9.8	9.5
75+ Years	7.7	7.5	7.3
Missing	0.4	0.4	-
GENDER			
Male	41.6	47.0	47.8
Female	58.3	52.8	52.2
Missing	0.2	0.2	-
RACE			
White	82.0	83.3	84.9
Black	11.5	12.3	13.2
Other	4.1	1.9	1.9
Missing	2.4	2.4	-

[1] Weighted to account for the probabilities of selection at the phone number and household levels, and conditionally adjusted to the 1995 Michigan intercensal estimates by age, sex, and race.
[2] Source: Office of the State Demographer, Michigan Department of Management and Budget, 1995.

TABLE A.2
1997 BRFS Sample: Distribution of Additional Weighted and Unweighted Demographic Characteristics (In Percentages)

Demographic Characteristics	Unweighted Sample	Weighted Sample [1]
EDUCATION		
Less than High School	11.3	11.8
High School Graduate	32.5	32.6
Some College	29.7	30.2
College Graduate	24.4	23.2
Missing	2.1	2.2
HOUSEHOLD INCOME		
<$10,000	3.9	3.2
$10,000-19,999	13.3	12.4
$20,000-34,999	26.7	26.7
$35,000-50,000	17.7	17.7
>$50,000	27.6	29.1
Missing	10.9	10.9
EMPLOYMENT STATUS (ages 20-64)		
Employed	74.9	75.0
Unemployed	4.3	4.5
Not in labor force [2]	15.3	15.5
Unable to work	3.6	3.1
Missing	2.0	2.0
MARITAL STATUS		
Married	52.7	59.3
Divorced/Separated	14.0	9.9
Widowed	9.1	6.8
Never married	20.0	19.5
Unmarried couple	1.9	2.2
Missing	2.3	2.3

[1] Weighted to account for the probabilities of selection at the phone number and household levels, and conditionally adjusted to the 1995 Michigan intercensal estimates by age, sex, and race.
[2] Includes homemakers, students, and retired persons.

Variable Definitions

The prevalence estimates for overweight presented in this report were based on body mass index (BMI) as calculated from the self-reported weight and height measurements. Body mass index is defined as weight (in kilograms) divided by height (in meters) squared [weight in kg/(height in meters)^2]. The BMI reference standards used to categorize weight status were based on the Second National Health and Nutrition Examination Survey 1976-1980 (NHANES II) sex-specific BMI distributions for persons 20-29 years of age.[5] The definition of overweight was a BMI greater than or equal to the 85th percentile (i.e., 27.8 kg/m^2 or greater for men and 27.3 kg/m^2 or greater for women). Errors in self-reported weight and height appear to be related to gender, age, and overweight status,[6,7] which tend to result in an underestimate of the prevalence of overweight using self-reported measurement data.

A new set of evidence-based clinical guidelines was released by the National Institutes of Health in 1998.[8] These new guidelines propose six categories of BMI (underweight <18.5; normal 18.5-24.9; overweight 25.0-29.9; obesity class I 30.0-34.9; obesity class II 35.0-39.9; extreme obesity ³40). Table A.3 shows the proportion of overweight and obese in Michigan adults according to these new guidelines.

TABLE A.3
Weight Status: 1998 Recommendations [1]
Michigan Adults, 1997
(in percentages with 95% confidence interval limits)

Demographic Characteristics	Obese (n = 2482)	Overweight (n = 2482)	Healthy and Underweight Range (n = 2482)
TOTAL	**19.2 ± 1.8**	**37.2 ± 2.2**	**43.6 ± 2.2**
AGE			
18-24 Years	11.0 ± 4.1	28.2 ± 6.1	60.8 ± 6.7
25-34 Years	15.4 ± 3.5	31.7 ± 4.5	52.9 ± 4.7
35-44 Years	21.6 ± 3.5	36.9 ± 4.1	41.5 ± 4.1
45-54 Years	19.1 ± 3.9	46.5 ± 5.3	34.3 ± 4.9
55-64 Years	27.3 ± 5.5	45.2 ± 6.3	27.5 ± 5.5
65-74 Years	23.7 ± 6.1	40.6 ± 6.9	35.7 ± 6.7
75+ Years	18.0 ± 6.3	30.8 ± 7.1	51.2 ± 7.6
GENDER			
Male	17.9 ± 2.5	47.6 ± 3.1	34.5 ± 3.1
Female	20.5 ± 2.4	27.3 ± 2.5	52.1 ± 2.7
RACE			
White	18.2 ± 1.8	36.7 ± 2.2	45.1 ± 2.4
Black	26.0 ± 5.5	39.8 ± 6.3	34.2 ± 6.1
EDUCATION			
Less than High School	27.7 ± 5.7	35.0 ± 6.1	37.3 ± 6.1
High School Graduate	18.5 ± 2.7	37.6 ± 3.5	43.9 ± 3.7
Some College	19.5 ± 3.1	38.0 ± 3.7	42.4 ± 3.9
College Graduate	15.0 ± 3.1	37.1 ± 4.1	47.9 ± 4.3
HOUSEHOLD INCOME			
<$10,000	17.8 ± 7.8	30.0 ± 10.4	52.2 ± 11.2
$10,000-19,999	24.6 ± 5.3	33.8 ± 5.7	41.6 ± 5.9
$20,000-34,999	20.5 ± 3.3	36.9 ± 3.9	42.6 ± 4.1
$35,000-50,000	16.8 ± 3.7	38.3 ± 4.9	45.0 ± 4.9
>$50,000	17.4 ± 2.9	41.5 ± 3.9	41.1 ± 3.9

[1] Weight status categories were defined as follows: Healthy and Underweight Range: <25 BMI; Overweight: ∃25 BMI to <30 BMI; Obese: ∃30 BMI. Pregnant women were excluded from this analysis.

Interpretation of Results and Survey Limitations

All results from the 1997 Michigan BRFS presented in this report have been weighted as described above and can be interpreted as estimates of risk and healthful behavior prevalence among the general adult population of Michigan. As with all survey estimates, these estimates are subject to sampling error (as well as other types of error) and therefore might differ from other survey estimates even if the surveys were conducted during the same time period, using the same target population and survey protocol. The confidence intervals presented with each prevalence estimate are an attempt to quantify the degree of sampling error. These results may therefore be used as one set of estimates of the prevalence of health risk behaviors for the Michigan adult population.

Telephone surveys have limitations. One limitation is the lack of coverage among those who live in households without telephones. The magnitude of possible bias from this undercoverage depends upon the magnitude of the undercoverage and the magnitude of the difference between the characteristics of those covered and those not covered by the sampling frame. Income differences appear to exist between those who live in households with and without telephones.[9] The potential for undercoverage bias, therefore, would likely be greatest for those risk behaviors that appear to be related to household income, overestimating those risks that are associated with higher income categories and underestimating those risks that are inversely related to income. According to figures from the 1990 census, approximately four percent of Michigan households do not have telephones. This non-telephone rate, however, is not consistent across all subgroups within Michigan. Approximately nine percent of African-American households in Michigan do not have telephones.[10]

Self-reported data are also subject to reporting bias. Respondents may tend to underreport health risk behaviors, and especially those risk behaviors that are illegal or socially unacceptable. Compared with estimates obtained from observational studies, median BRFSS estimates for seat belt use were approximately 20 percentage points higher, when defined by "always or nearly always" using seat belts,[11] and median BRFSS estimates were only 2-5 percentage points higher when seat belt use was based on "always" using.[12] Despite the problems of underreporting of alcohol consumption, state-level comparisons of alcohol sales data have been shown to correlate with the BRFSS self-reported estimates of heavy drinking, binge drinking, and drinking and driving.[13] Self-reporting biases have been shown for height and weight, the magnitude and direction of which appear to vary with gender, age, and relative weight status.[7] In a study from the New York BRFS, prevalence of selected self-reported, CVD-related risk factors tended to underestimate the prevalence from measured data.[14]

The disadvantages of the telephone survey methodology are thought to be outweighed by the advantages, which include the quality control over data collection made possible by a computer-assisted telephone interviewing system, cost efficiency, and the speed at which data can be collected.[15,16]

REFERENCES

1. American Cancer Society. *Cancer facts and figures - 1998.* Atlanta: American Cancer Society, 1998; publication no. 5008.98.

2. Office of Surveillance and Analysis, Center for Chronic Disease Prevention and Health Promotion. *BRFSS Operations Manual 1989.* Atlanta, GA: Centers for Disease Control, 1989.

3 . Shah BV, Barnwell BG, Bieler GS. *SUDAAN User's Manual, Version 6.4, Second Edition.* Research Triangle Park, NC: Research Triangle Institute, 1996.

4 . Office of Surveillance and Analysis, Center for Chronic Disease Prevention and Health Promotion. *BRFSS Operations Manual 1989.* Atlanta, GA: Centers for Disease Control, 1989.

5 . Najjar MF, Rowland M. Anthropometric reference data and prevalence of overweight, United States, 1976-80. *Vital and Health Statistics,* series 11, no. 238. Washington, DC: Public Health Service, 1987. (DHHS Pub. No. (PHS)87-1688.)

6 . Rowland ML. Self-reported weight and height. *Am J Clin Nutr* 1990;52:1125-1133.

7 . Rowland ML. Reporting bias in height and weight data. *Statistical Bulletin Metropolitan Life Insurance Company* 1989;70(2):2-11.

8 . NHLBI. Clincial guidelines on the identification, evaluation, and treatment of overweight and obesity in adults. Bethesda, MD: National Institutes of Health, National Heart, Lung, and Blood Insttitute, 1998.

9. Groves RM. *Survey errors and survey costs.* New York: John Wiley & Sons, 1989, p. 117.

10 . U.S. Bureau of the Census (1990) (MI-STF#A/STF4A).

11 . Robertson LS. The validity of self-reported behavioral risk factors: seatbelt and alcohol use. *J Trauma* 1992;32:58-59.

12. Nelson DE. Validity of self-reported data on injury prevention behavior: lessons from observational and self-reported surveys of safety belt use in the US. *Injury Prev* 1996;2:67-69.

13. Smith PF, Remington PL, Williamson DF, Anda RF. A comparison of alcohol sales data with survey data on self-reported alcohol use in 21 states. *AJPH* 1990;80:309-312.

14. Bowlin SJ, Morrill BD, Nafziger AN, Jenkins PL, Lewis C, Pearson TA. Validity of cardiovascular disease risk factors assessed by telephone survey: The Behavioral Risk Factor Survey. *J Clin Epidemiol* 1993;46:511-517.

15. Frey JH. *Survey Research by Telephone.* Newbury Park, CA: Sage, 1990.

16. Lavrakas PJ. *Telephone Survey Methods.* Newbury Park, CA